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BEE-KEEPING is a regular trade in Hannover, Germany. The professional apiarist serves as apprentice two years, then he is ready for a situation with a farmer who owns bees.

HAM SMITH, p. 627, reports five yields running from 1000 to 2000 pounds. If that means per single colony, it's a big thing. If each of the five men had 100 colonies, and their total yield is given, it's rather poor.

THE OTHER DAY I counted on one comb eleven cases in which the queen had laid eggs in cells containing pollen. In all other respects she seemed to be a respectable queen. [I wonder if Mr. Doolittle would think this was "Nature's plan."—ED.]

BRITISH B. MANN sends me the following summer drinks: *Honeyed Buttermilk*.—One spoonful honey to three-fourths glass buttermilk. Stir well, then add as much soda as will lie on a dime. *Honey Pick-me-up*.—One egg well beaten in a pint of cold milk, with one tablespoonful honey added.

BARON BELA AMBROZY reported at the big German convention last year that, by feeding honey with 50 per cent water, and afterward with 30 per cent, he got no satisfactory results; but by using pure honey he got 3 pounds of comb for every 4 pounds fed. Doesn't that differ from reports in this country?

R. C. AIKIN is just as level-headed as can be in that article on p. 612. Instead of shipping off and selling at a loss what your home market won't consume, lower the price so your home market *will* consume all. Of course, sell where you can make most; but if there's any favoring to be done, favor those near home.

A WRITER in *Le Rucher Belge* thinks many of the fully matured young bees dragged out of the hive dead owe their death to the fact that they were wrong end to in the cell, resulting from their not being able to change position in time for their metamorphosis. Could that be a result of weakness?

IF C. GROSS, p. 626, had said he found the clipped queen with the swarm when he first found the swarm, it would have been a very unusual case. Finding it in the hive next day was not so unusual. I've had more than one case of the kind. A neighboring colony swarmed, and the clipped queen went into the wrong hive.

REPORTS from England and Europe as well as this country make out few good honey-yields. Unusual complaints are made as to the amount of honey-dew. Don't honey-dew and poor seasons largely go together? If good honey is present, don't the bees neglect the honey-dew, and carefully gather it when there's nothing better?

SOME ONE SAYS bees gather more pollen early in the day because later it is so dry the pollen doesn't pack well. A. Wathelet, editor *Rucher Belge*, says bees with loads of pollen carry little honey; and, when honey is abundant, carriers of pollen are scarce, all being intent upon honey. According to that, bees let up on pollen as the day advances, because nectar flows more freely.

WHEN A HIVE IS RAISED on four blocks, not only do all the bees that are used to the front entrance continue that, but all the later-hatched young bees follow their example. There are occasional exceptions. Years ago when I left an opening at the upper part of the hive at the back end, I'm not sure there was ever a case in which the bees used this opening as an entrance.

ACCORDING TO Bro. Doolittle, page 624, Nature's plan is to have eggs in the brood-nest placed "in the center, always." Then when a queen varies from Nature's plan when left to herself by putting eggs all around the outside of the brood, Bro. Doolittle, will you please tell us whose plan *that* is? [Do bees ever perform any work "always" in the same way? There are *general* rules in hive economy, but no invariable ones. Am I not right, friend Doolittle?—ED.]

ABOUT NOW is time to repeat again that people *can* be educated to buy candied honey and know what to do with it. C. F. Muth succeeded in building up a big trade that preferred honey in the granulated state. Then

there are more people than you might suppose who really prefer honey candied. This week there was at my house a young lady who refused the finest comb honey, but would eat her share of candied extracted. [That's right—keep the ball rolling.—ED.]

A COMMON NOTION seems to be that clipped queens are superseded sooner than others. Isn't that because you can always tell when a clipped queen is superseded, and with whole wings you can't easily tell whether there has been any change? If the average age of queens is three years, then a third of the queens are superseded every year. [That "common notion," like many another common notion, is not founded on facts. Queens clipped or not clipped live out their best usefulness in three years, and some think in two.—ED.]

ON PAGE 628, mention is made of Hutchinson using sections $1\frac{1}{2}$ inches wide, as if that were unusually narrow. I understand they were used without separators, making comb the same thickness as sections $1\frac{3}{4}$ with separators. If they were used with separators, then the thickness of the comb was 1 inch, or $\frac{1}{8}$ to $\frac{1}{4}$ inch narrower than bees naturally build them. [The width $1\frac{1}{2}$ is narrow when compared with $1\frac{3}{4}$, the standard width for the United States. As to the natural width of comb—what is it? Some say $\frac{7}{8}$ inch, some $1\frac{1}{4}$. But there is another point to be considered. Is it not true that combs one inch thick or less will be filled and capped better and quicker than combs $1\frac{1}{2}$ or $1\frac{3}{4}$ in. thick?—ED.]

W. WOODLEY, the able contributor of *British Bee Journal*, has no use for a section-cleaner, because his sections "*are never made dirty*," so that no scouring or cleaning is required. Bee-keepers may save a large amount of labor if they are careful and clean in all their work in the apiary." But, friend Woodley, it isn't I but the bees that dirty the sections. Either your bees do differently, or else your market doesn't require as clean sections as our markets. [There is a vast difference in markets as well as in localities. In my occasional "travels" among bee-keepers I notice that, in one locality, there may be comparatively little propolis-daubing, and in another there is considerable. In one locality propolis is red, and in another brown and dirty-looking. There is also a difference in bees. Carniolans deposit the least; Italians next; blacks and hybrids next in order, and Punics or Tunisians the most of any.—ED.]

A NEW BOY at school has to run a sort of gantlet till the others find what stuff he's made of. Same way with bees, in a time of scarcity. Set a hive in a new place, add a fresh story, or make almost any change, and the robbers will try to enter the smallest crack, while right beside it stands a colony unmolested although having plenty of big leaks. ["Plenty of big leaks?" That reminds me that on this point, at least, the doctor *knows* what he is talking about. "Big leaks"—why, his hives have 'em all over—dilapidated lot many of them are. There, doctor, I didn't

mean to give you away quite so badly; but it's only fair to say that you have been hanging on to a lot of your hives (twenty or thirty years old) with the intention of superseding the whole lot just as soon as you find a hive that suits you to a dot. I don't blame you for taking time to look over the field carefully. Say, supply-dealers, here is a chance to show the doctor the "only ideal hive."—ED.]



SELLING DARK HONEY.

BY MRS. L. HARRISON.

This week I visited an apiary two and a half miles distant from ours, located in much better bee-pasture, as all the adjacent land is occupied by market-gardens. There is also land subject to overflow from the Illinois River, within easy flight of the bees. On entering the house I noticed upon a table a dozen glass jars with tin covers, holding about one gallon. These jars are usually used to hold candy in stores. The color was like that of strong coffee, and my curiosity was excited. In reply to my query, "What have you in those jars?" the lady said, "*Honey*."

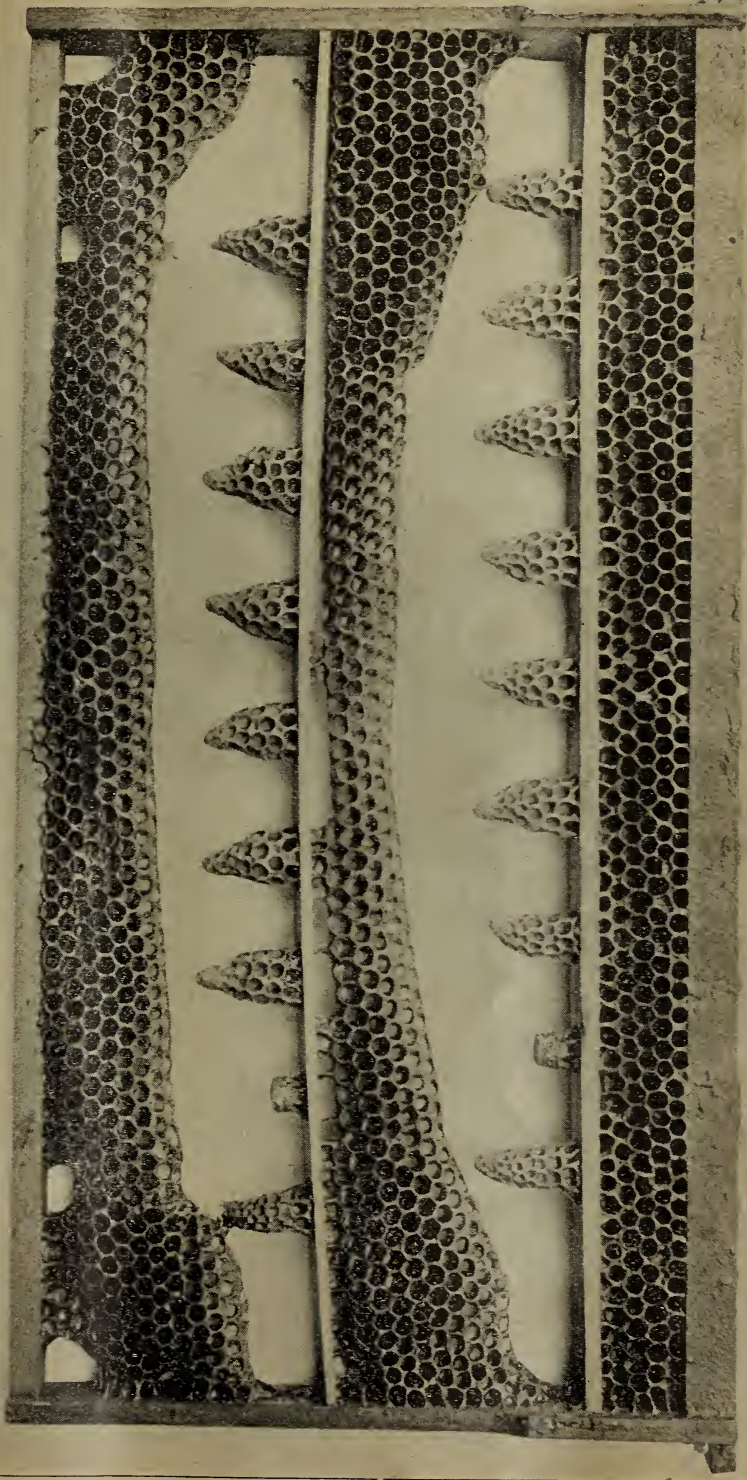
I never saw such stuff as this before. She said, "The combs were built crosswise of the sections, and some were bulged so I could not pack them. The straight nice ones are in those cases."

On cutting some of the comb I found it was tough and thick. She said, "Look at that box-elder. Some mornings you would think there was a swarm there, they hummed so among the leaves; and the lilac-bush beneath shone as if the leaves were varnished. That grove of oaks there had honey-dew also."

Putting this honey-dew upon the market will be an injury. Many persons think that bees make honey; and if they eat some of this they will come to the conclusion that they do not want any more. If extracted, cigar-makers might use it, or printers could use it in their rollers. If I have honey-dew I will feed the bees upon it another spring, to rear brood.

BEESWAX.

This lady showed me her wax. From its appearance I judge that it had been boiled in water too much, and then heated too hot. For those who keep bees in a small way, and have only a small quantity of wax, there is no better way than to put the scrapings of hives and sections in an all-metal sieve; set it over a pan of cold water, and put it in the oven of a cooking-stove. As it melts it runs down into the water; and if the oven is very hot, change it to another pan of cold water. In this way light-colored wax is the result. I don't want the water in the pan to boil. If the first pan is removed, and the second should be forgot-



QUEEN CELLS FROM ARTIFICIAL, DOOLITTLE CELL-CUPS; A FAIR SAMPLE OF WORK DONE AT THE HOME OF THE HONEY-BEES.—SEE EDITORIAL.

ten, boil over, and waste, the best wax would be in the first pan. Sometimes a third pan is used; and when the residue is dry I scrape it from the sieve into a paper, roll it up, and keep it for kindling the fire. I never let bits of comb and scrapings accumulate; but when there is a convenient time, I melt them up.

When I remelt those cakes taken from the pans of water I put them into a pan placed over a kettle of boiling water, and, when melted, strain through cheese-cloth tied over a fruit-can that has had both ends removed. Set this in a basin, pour through, and have the cakes of one size. I sell three pounds for a dollar to those who sew carpets, manufacture overalls, etc.

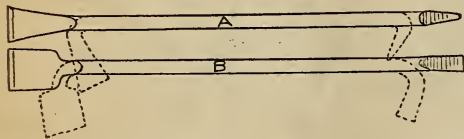
Peoria, Ill.

[Mrs. H., you have given us an idea that is at least new to myself—that is, using the residue, after the wax is extracted, for fire-kindlers. We have barrels of it from our wax-room; and after we get all the wax we can by using steam we put it into the sun wax-extractor. After the sun has done its best we have been in the habit of putting the refuse under the boilers, to make steam. But if made into little balls, handy to put into the stove, I think it might be splendid for fire-kindlers.—A. I. R.]

PRIES, SCRAPERS, AND DRAWN FOUNDATION.

BY J. W. SOUTHWOOD.

While the subject of pries and scrapers is before the minds of the readers of GLEANINGS I will give a description of the kind I have been using for several years, and which I like quite well—better than any others I have ever seen. The pry is made of a steel rod 14 in. long and $\frac{3}{8}$ in. thick. It is flattened till it is $\frac{1}{4}$ in. thick and $\frac{1}{2}$ wide. One end is made wedge-shaped, and is $\frac{7}{8}$ in. wide at the end. The other end is also made wedge-shaped, and is only $\frac{3}{8}$ in. wide, and rounded at the end as shown in illustration. I find this one of the handiest tools I use in the apiary.



My scraper is made of the same kind of rod, and of the same length and thickness, and left round, except the ends, which are both flattened wedge shape, the same as the pry, except that the wide end is shouldered as at B. It is $\frac{7}{8}$ wide; but as we now use brood-frames an inch or a little more, I think 1 inch or $1\frac{1}{2}$ would be better. The other end is made $\frac{1}{4}$ in. wide, and ground on the edges so as to leave sharp right-angled corners. Each end is then bent in shape like a hoe, and kept sharp by filing as a plane-bit is ground. If given the proper slope it will scrape propolis as a plane dresses a plank. The narrow end

is just right for cleaning the tin rabbets on which the brood-frames are hung. The sharp edges clean the sides of rabbets.

I will not attempt to give the uses of these tools, but will say the apiarist who has them will soon find much use for them.

The drawn foundation you so kindly sent me arrived a little smashed. I will give it a test, and report. I did not get the sample last season in time to give it a trial, so I am now testing it. Without waiting to test the sample just received I will say I am quite pleased with it. If the two objections I offered against the last season's sample—namely, flat base and too high cell-walls—have been removed it will be better. I have never thought enough of flat-base foundation to give it a trial. I am quite sure we want a natural base, and I think all we want in the height of cell-walls is just enough so the bees will readily accept it. Of course, I mean when conditions are all favorable. I think $\frac{1}{8}$ or $\frac{3}{16}$ is all that is necessary to accomplish this.

I think we should all feel grateful toward you and Mr. Weed for your great effort, arduous work, and financial expenditure in accomplishing that which I confidently believe you view as one of mutual benefit.

Monument City, Ind.

RAMBLE NO. 151.

How to Use a "Jouncer."

BY RAMBLER.

While the State Bee-keepers' Association was in session in Los Angeles in January the members expressed real pleasure in meeting Mr. Thos. Wm. Cowan, editor of the *British Bee Journal*, and the Rambler tried to be just as sensible as the rest in that respect. Mr. Cowan sojourned several days in the city; and soon after the meeting adjourned, he, Mr. C. A. Hatch, Mr. M. H. Mendleson, and the Rambler enjoyed a day's ride along the hills that border the Cahuenga Valley and out toward the ocean. A plentiful supply of water has been developed in these hills, and is used largely in the development of market-gardens. Scores of Chinamen are seen laboring, and the succulent vegetables find a ready market in the city.

Along these hills we have one of those remarkable California features, the frostless belt. While in the city near by, or in the lowlands before us, there are killing frosts, here is a belt close to the hills where tomatoes and other tender garden vegetables can be grown the year round.

After riding through this beautiful garden country we pass through the extensive gardens, pass the residence, and enter the canyon owned by Mr. Durfee. At the extreme upper end of the canyon we find the Rambler's apiary. This apiary is only an embryo of what is anticipated; but instead of telling what is proposed I will explain some old and new features while the rest of my companions are having their lunch and a bee-keepers' picnic in the shade of an oak-tree, and near one

of those tunnels that have been driven into the mountain for the development of water, water, beautiful water.

Of the forty-one hives shown, ten are in the Hoffman frames and the rest are in the Heddon hive; and here it may be just as well for me to state just what my feelings are upon the hive question. Before leaving my Eastern home I had tried several styles of hives, and had finally worked up to 100 Heddon hives, and had better success with them than with any other hive I had used. Up to that time I

preference; this preference with me is probably as deep-seated as is Doolittle's for the Gallup frame, or Dadant for his jumbos, or Sam Green for his box hives. We all have a certain measure of success according as we have learned to handle our hives.

My apiary is something on the experimental order; for, aside from the Hoffman hives, I have two sizes of the Heddon, the regular eight-frame, and later I have constructed quite a number containing ten frames. By storifying the latter I can make a veritable jumbo hive.

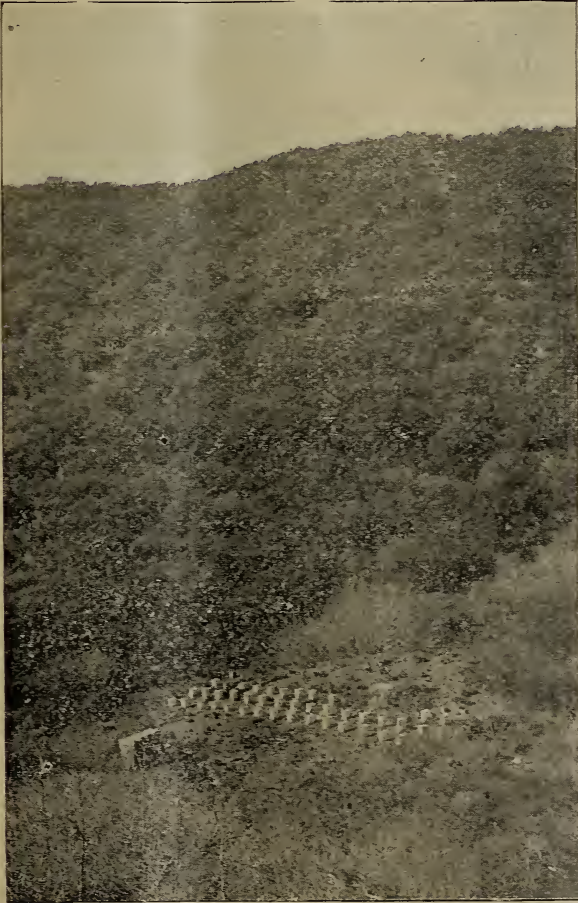
There must be a limit to the size and shape of the frame we use; but the bee-keeping fraternity will probably never agree as to the exact size.

The Langstroth frame, or frames of that dimension, undoubtedly give the most universal satisfaction. Some of us, however, think we find an advantage in using a different size, and I have seen extracting-supers with frames even smaller than the Heddon; and, on the other hand, there are frames so large that it is troublesome work to shake the bees from them. While I can use the L. frame, and like it, I have several reasons for preferring the shallow fixed-distance super; and I am quite sure I would use them even upon a jumbo brood-chamber; but in this article I wish to call attention to only one feature that embodies a new plan for clearing the super of bees.

I have never taken kindly to brushing bees from the combs when extracting, and have tried to devise means to overcome it. I have given the Porter bee-escape a thorough trial, and, while it works fairly well, it is not rapid enough. We have to wait several hours for the bees to escape. Place the escape on at night and the bees are out in the morning, provided there is no brood nor queen in the super. In that case we have to resort to the brush in spite of the escape. In this State the nights are usually so cool that the

honey gets cooled off before morning, and it does not flow from the comb as freely as when taken from the hot hive. What we need for making the bees escape is something that will act immediately.

In the use of the close-fitting shallow super, I have devised and successfully used what I term a *jouncer*. When we shake an ordinary frame a good share of the bees are thrown off. If the comb is old and strong, and we jounce the frame against a solid object, nearly all of



RAMBLER'S APIARY.

had never used the L. frame; and if I had, perhaps I should have had the same success, or I might have had the same success with the later Hoffman hive and frame.

Since I came to California, seven years ago, I have managed bees in a great variety of hives; and through all of the experiences there has been a hankering for the trial of the Heddon hive on this coast; so when I commenced to collect an apiary of my own it was but natural that I should give that hive the

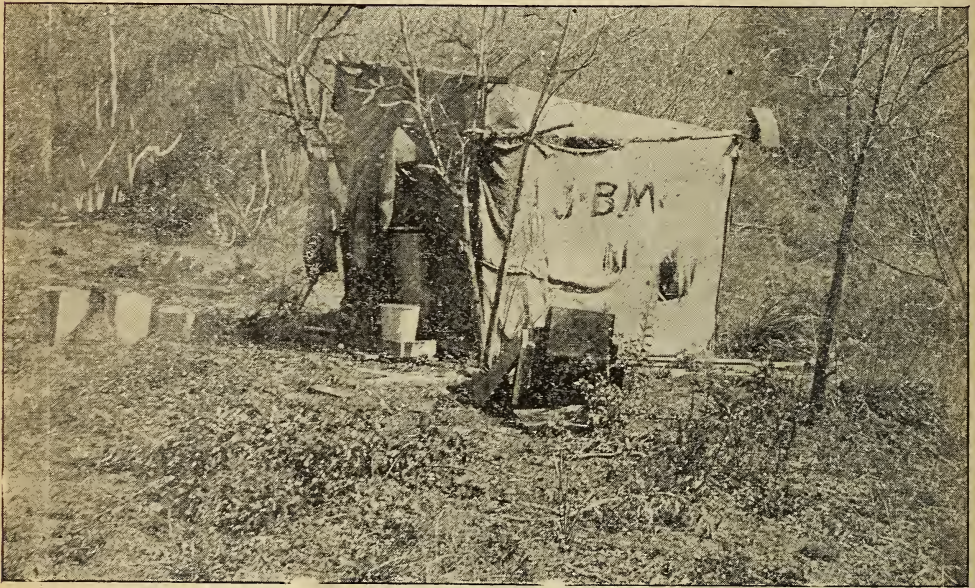
the bees will go off, and the comb is not damaged. I apply the same principle to the shallow extracting-super. A little smoke when the cover is lifted drives a good portion of the bees below. Now remove the super and place it in the apparatus shown in the cut, and jounce the ends on the ground, and the remaining bees rattle out upon the little sheet provided to catch them. In order to prevent the jouncing operation from breaking combs, the lower ends of the end pieces are cushioned with numerous folds of gunny sacking. This relieves a too sudden jar, and at the same time gives shock enough to send the bees out.

I have used this device upon supers in which were new combs filled with honey

gunny sacking to a few rough poles and young growth of trees, and then we have a house, although at the close of the season it looks the worse for wear. One of the things that will hereafter be found in this apiary will be a new and unique portable honey-house, an illustration of which will appear later.

The three good friends who were with me did not discuss to a great extent the hive I am using. Evidently there were fixed opinions in the little group; and to illustrate a point, Mr. Cowan related an incident that happened to the hive a few years ago when he was a guest of the inventor.

Mr. Heddon was about to show how easily he could shake all of the bees from the brood-chamber at once, when, with the first shake,



RAMBLER'S HONEY-HOUSE.

without breaking them. Several supers are operated upon, and immediately taken to the extracting-house. It takes a little more time to uncap and extract, but the time lost here is gained in the yard, and I prefer to spend the most of the time in the shade.

I have never tried the jouncer on the Hoffman hive. The only objection to its successful working would be the heavier weight to jounce, and the more danger of breaking the deeper combs.

I did not show this apparatus to my friends, for it was such a crude thing that I was ashamed of it. I promise that, when they visit me again, a perfected one will be on exhibition.

The honey-house on my ranch could not be hidden; but of this I was not ashamed, for there are scores of them in this State. This style is made by applying a few widths of

bees, brood-combs, and all went to the ground.

While the accident happened through a faulty support of the frames, Mr. Cowan's rendering of it showed a certain amount of British stiff-neckedness in relation to the hive, and Mr. Hatch laughed as though he had the same style of neck too. Mr. Mendleson's neck seemed to be more pliable. He is using the Danzenbaker hive, and is open to the adoption of improvements. Getting the bent of these fellows, I did not show them my jouncer. Their necks would have been dead set against that also.

In spite of rigid necks we had a pleasant outing; and after examining the tunnels, and drinking the pure water that comes therefrom, we visited Mr. Levering's apiary and then returned to the city.

A few days after our delightful drive in the

Cahuenga I suggested to Mr. Cowan that we make a sort of international alliance, make a sortie on Florence, in the suburbs of the city, and capture bee-keeper C. W. Dayton. I knew we should find quite a number of valuable improvements here that might be of use to us.

The British (Mr. Cowan) had command of the artillery, and carried the rapid-fire maga-



RAMBLER'S JOUNCER.

zine battery (camera) slung over his shoulder. The American force (that's I) had command of the infantry and the skirmish line. We made a rapid descent on Florence by rail, and captured the station with ease. We deployed our forces up the railroad track, about half a mile, and made an easy capture of the Dayton residence. C. W.'s mother was the only occupant. We were, courteously treated by this lady, and found her to be one of those good American mothers, well posted upon all of the affairs of the day; and from her manifest knowledge of bee-keeping I have no doubt she could manage an apiary with almost as much success as her son. She had no objections to our capturing C. W., and even gave us the information that he was building a new fortress just a few rods down the street.

As we deployed our forces under cover of several houses and a fence, Mr. Cowan thought the capture would be easy, for he saw a man at work on the identical fortress when we were marching up the railroad.

We made a gallant charge through the fence and field. The British unlimbered the artillery ready for action, while the American skirmished ahead. But the man we thought sure to capture had evidently abandoned his fort and retreated. We surrounded the entire fortress, and instituted a thorough search. I glanced into the little shop. The plane and the saw were there, but they were silent.

There was no pusher behind them. After a further search we were about to withdraw our battalion when I thought it would be a good plan to look into that big honey-tank which was standing a little to the rear. I thought there was a faint noise proceeding from it. The British artillery was again ready for action. I silently approached, and, getting on my tiptoes, I peered into the tank, and, lo and behold!

BULGING OF HONEY IN SECTIONS.

What Part does the Separator have in the Matter?

BY DR. C. C. MILLER.

In a footnote on page 546, Mr. Editor, you say there is bulging at the upper part of the comb if the separator is $\frac{1}{4}$ inch lower than the top of the section. If I'm not mistaken, in the fence separator the space between the slats is $\frac{3}{8}$ of an inch. If the separator comes $\frac{1}{4}$ ($\frac{2}{8}$) of an inch below the top of the section, and we deduct from that $\frac{3}{8}$ the thickness of the wood in the section, which is $\frac{1}{8}$ or more, we have left, as the actual space to effect the bulging, $\frac{3}{8}$ of an inch (less if thicker sections be used). Now if $\frac{3}{8}$ will not allow bulging at the middle of the section, will a space $\frac{1}{8}$ of an inch less at the top cause bulging? Possibly you may reply that bees are more inclined to bulge at the outer edge, and at any rate you tell me that you have samples before you that prove your contention, and it's hard to kick against actual facts.

I have wondered just a little whether your samples were not exceptional. I've skirmished around to find what few sections I could, and none of them show signs of bulging at top, although the separator was $\frac{1}{4}$ inch below the top of section. I don't lay very great weight on this, for the number is small, and there might be something exceptional in the case. But I do lay great weight upon the fact that I've had thousands of sections produced with the separator $\frac{1}{4}$ inch below the top of the section, and there has been no trouble about handling them. You probably know better than I that tons upon tons have been produced by others in the same way. With the plain section and fence, the top-bar of the section comes $\frac{3}{8}$ ($\frac{1}{2}$ of an inch) from the plane of the separator. My old-style $1\frac{1}{8}$ sections have a top-bar $1\frac{1}{2}$ inches wide; some of them, $1\frac{3}{8}$ wide. That makes the top-bar of the section come respectively $\frac{3}{8}$ and $\frac{1}{2}$ from the plane of the separator. That is, my top-bars are practically $\frac{3}{8}$ and $\frac{3}{4}$ narrower than yours. Now, if mine work all right, why not yours? for, according to the figures, mine ought to make the more trouble. Don't tell me that mine are not handled by the narrow part of the top-bar, for they are, and in lifting a first section out of a case you can't possibly handle them in any other way.

Suppose, however, that there should be bulging wherever the separator is lacking opposite the comb, does that make it necessary to have the separator go any higher than the comb goes? Surely the bees will not

bulge the top-bar, and if the separator comes within $\frac{1}{8}$ inch of the top of the section that ought to satisfy all your fears. Great stress is laid upon having spaces in the separator for the sake of freer communication. Please don't fail to have as free communication as possible at the top as well.

I had hoped to settle this question and some others by experiment, but the utter failure of the honey harvest prevented.

ARE FENCES MORE EASILY CLEANED THAN PLAIN SEPARATORS?

A footnote, p. 546, says that all that needs to be cleaned in the fence is the cross-cleat, or that part of the fence that comes in contact with the section. I remember when that idea first came to me, and I was very much pleased with the thought that only the part that touched the section needed cleaning, making it easier to clean than a plain separator. After some time it dawned upon me that it was also true that, in the plain separator, only that part needed cleaning that touches the sections—same cleaning in each, leaving the question, "Is it easier to clean a given amount on a plane surface, or on a surface raised at intervals?" Lay a plain separator on a table, and with the same sweep of the hatchet you strike two or three of the places to be cleaned; whereas, with the fence each cleat comes in for separate treatment. I suspect when you try the two kinds side by side, as I have done, you'll think you can clean plain separators in less time than the others.

ARE FENCES CHEAPER IN THE LONG RUN THAN PLAIN SEPARATORS?

"I believe the doctor once said he threw away his separators every year. Now, if he buys new ones I can not see but they cost a good deal more than fence separators that would have to be bought only once." That's what you say, Mr. Editor, on page 546, and I can hardly see how you could say it if you had carefully read what I said about fifteen lines higher up the page. Let me repeat: "A uses plain separators, and cleans them every year. B uses fences, and cleans them yearly. Plainly, A has the more economical plan of the two. Now, if I can do better than A by buying instead of cleaning, and A's plan beats B's, how under the sun can B's plan beat mine?" You pay no attention to the question asked, but merely repeat what you had said more than once before, that it must cost more to buy plain separators every year than to buy fences once for all.

Let me make just one more effort, putting the matter in a little different form. I can not clean separators of either kind for less than \$2.00 a thousand. I can buy plain separators for less than \$2.00 a thousand. Which will cost more, to clean fences every year, or to buy plain separators every year?

THE DEFINITION OF THE WORD "SECTION."

A while ago I insisted that the word "section" could be properly used as meaning the piece of honey contained in the section box. Months ago I wrote the publishers of the Standard Dictionary, asking them to expunge

that definition, and have been intending ever since to recant in these columns. "A pan of salt" and other things were thrown at me to make me change my view, but such things as were said had really little bearing upon the subject except the plain statement that the word was not properly so used; and when all who said any thing about it said the word was *not* correctly used in that way, that settled it. I had no right to take a local use of the word as against all the world. But, as I have said, the kind of argument used had little bearing. You can't always decide by reasoning how a word is used; you must simply take the usage itself. Because the word "pan" does not mean salt when I say "a pan of salt," it does not follow that, when I say "a lot of land" the word "lot" may not mean "land," for it does, as when you say "a city lot," or "a wood lot," and the dictionaries, ancient and modern, will sustain such definition. The same kind of reasoning would rule out the common use of the word section among beekeepers, and insist that it must always be called "section box." But it is right to call it section, just because that has become universal usage. It would be a good thing, however, if a little more reasoning were used in establishing usage.

Marengo, Ill.

[My footnote was based largely on two or three small lots of honey in old-style sections, that had come from Mr. R. C. Aikin, of Colorado, some of which was in the original crates just as it came from the hive. I noticed that his separators dropped down $\frac{1}{4}$ inch, and that in many instances combs were bulged beyond the wood near the top edge of the section. In addition to this, even in our own apiary years ago I noticed that honey was inclined to bulge out this way. Accordingly, separators in our hives for the trade for the last two or three years have been made to come flush with the top edge of the section.

I believe this bulging over the top of the separator, where it drops down $\frac{1}{4}$ inch, is largely a matter of locality and season. But the point I tried to make was this: That there were certain conditions (when separators are dropped $\frac{1}{4}$ inch) under which bees would bulge comb honey over the top of the separators, and that, therefore, we should have our separators so arranged that there could be no bulging at any time under any conditions—that is, if we could do so just as well. What might not be any serious annoyance in and around Marengo might be quite a serious one in other localities; and when plain sections are considered, this becomes a very important point.

The doctor raises the point that, if the bees will not bulge the honey opposite the spaces between the slats of the fences, why should they do so in the small space just above the separator dropped down $\frac{1}{4}$ inch? The condition here, doctor, it seems to me, is not quite the same. Bees are more inclined to bulge at the point of attachment above than elsewhere. See?

There, now, doctor, you have brought up

that old bone of contention again—the cleaning of fences and separators. I very much doubt whether the fences will have to be cleaned as often as the plain separators. In fact, we have a letter in hand now from a correspondent who says less propolis is deposited on the edges of plain sections and fences than on the separators and bee-way sections. He does not give the reason; but I assume that, inasmuch as there is freer communication from side to side and from section to section, the bees do not seem to have the notion that they *must* seal each individual honey-box into a compartment by itself. If they would once begin the process of plugging in glue, they would have a job on their hands. Now, please do not put me down as saying that this is a positive fact. I do not *know* that this would be true in all cases.

BEE-KEEPING IN “MERRIE ENGLAND.”

Apiary of C. N. White.

Our bee-garden picture shows the apiary of Mr. C. N. White, and is situate in the village of Somersham, Hunts., in which place he has resided for the past eighteen years. In response to our request for a few particulars regarding himself and his work to go along with the picture, Mr. White says:

“My first lessons in bee-keeping were taken from my old friend and schoolmaster, Mr. Winter, of Caistor, Lincs., with whom I lived while apprenticed as pupil-teacher. Here, twenty-eight years ago, I first saw bees kept on a humane principle, for my *bee-master* (though hardly progressive or scientific enough to fairly give him a claim to that dis-



APIARY OF C. N. WHITE.—FROM BRITISH BEE JOURNAL.

But to get back to the original question, let us assume that the fence will be glued up as much as the separator. If it costs you \$2.00 a thousand or more to clean the old - style separators, I would employ some girl or boy to do it by the piece. Suppose the boy were given a rate whereby he could earn eight or ten cents an hour; I would guarantee that he would clean your fences for a good deal less than \$2.00 a thousand if he did it by the piece or by the thousand. But let us assume that it would cost just as much to clean plain fences as separators. The only difference would be the difference in first cost of fences over separators.

But I suspect that we had both better wait until we have an opportunity to test the cleaning of separators and fences.—ED.]

tinctive title) preferred an economical as well as humane system of bee-keeping. From 1875, when I left college, to '79, when I settled at Somersham, I was gleaning information on bees, and learned much from Mr. W. B. Jevons, of Market Rasen, who was then an expert bee-keeper. Here, then, I formed the nucleus of an apiary that eventually became my pride, and did not lack the admiration of friends. The work and worry inseparable from scholastic duties in a rural school of 250 children at first prevented me from doing very much with the bees; but since I have been able to turn to the hobby in grim earnest, I have by practical work and by the use of my pen endeavored to show other rurals that bee-keeping is a source of interest and profit, and tends to promote good health and the power

to work hard. For myself and the benefits it has conferred in this line, the multiplicity of duties I have performed and still attend to, fairly well shows."

Few will dispute Mr. White's claim to be called a worker when we learn that he is Hon. Sec. Hunts. and Cambs. Teachers' Association, and in this capacity has been representative at annual conferences of teachers in London and elsewhere. He is Hon. Sec. Hunts. B. K. A. and of the Cambs. and Isle of Ely B. K. A., while locally he is secretary to trustees of local charity, Hon. Sec. Technical Education Committee, collector of taxes, church choirmaster, conductor of concerts, is correspondent of five local weekly papers, and writes bee-articles for ever so many other papers besides.

Bee-keepers also know that Mr. White has done a very great amount of bee-tent lecturing during his annual holiday from school duties; and when he coolly tells us that "the above are my means of recreation from school work," it almost makes one wonder when or during what hours he lies down to rest. Solid testimony to the value of the disinterested services he has for many years past rendered to his neighbors is found in the public recognition of his labors on several occasions, when testimonials have been presented to him by the leading residents of his neighborhood.

In concluding this brief notice we may mention one event, viz., the public presentation to Mr. White of a gold watch and illuminated address in 1895, on his fortieth birthday, to mark his sixteen years' services to the locality. On this occasion, when returning thanks for the honor done him, he alluded to the fact that in all his work much of the success he had been able to achieve was due to his good wife, and the possession of a happy home—sentiments in which we are sure our readers will cordially agree.

Mr. White holds the first-class certificate of the B. B. K. A., and frequently officiates as judge at bee and honey shows. Indeed, he may be very fairly classed as one of the public men of the bee-keeping craft.—*British Bee Journal*.

PLAIN SECTIONS A SUCCESS.

Require no Cleaning; Fences Could be Improved a little; Blacks inferior to Italians and Hybrids.

BY E. W. BROWN.

Here is my report on the new fence. I have used about 600; a few I and T fences, but the greater part being my special fence you made to go in the Hilton T super, three sections on a slat.

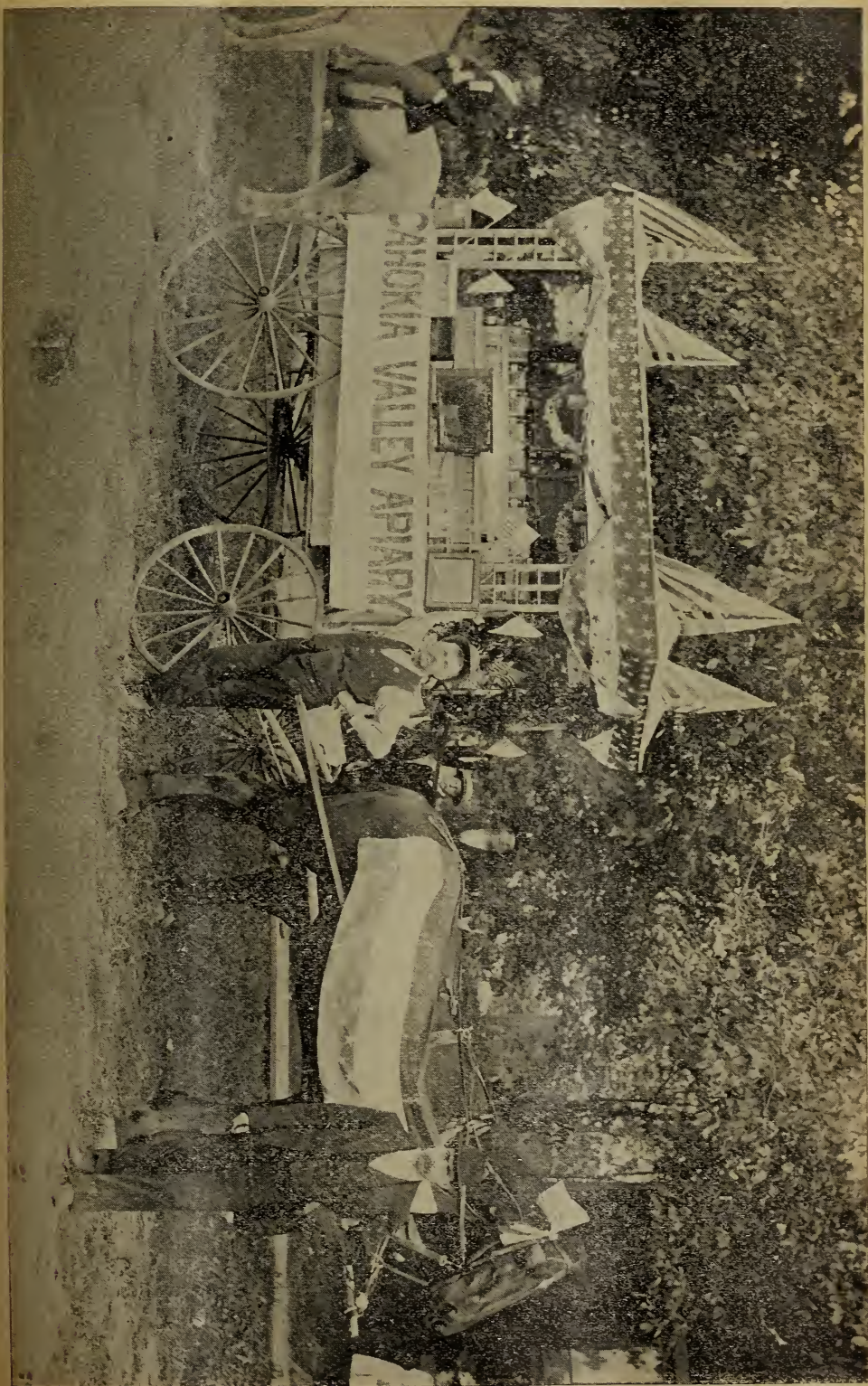
The kind of season we had this year for clover is the kind in which the Italians and hybrids store some surplus, while the blacks store nothing till basswood comes. As basswood did not amount to a great deal this season, the black bees stored but very little surplus. I got 48 well-filled (15 ½-oz.) sections to the colony from 40 Italian and hybrids, there being more or less Carniolan blood in

my hybrids. This was white-clover honey. From 10 black colonies I got no white clover, but about 12 sections of basswood per colony. While the black bees were working on basswood the other bees continued to work steadily on white clover. My best colony gave me 96 well-filled sections and 20 pounds of extracted. This colony has an Alley queen, bought in 1896. She has always been in a 10-frame hive, and has never swarmed, always coming in at the lead for surplus honey. I received two queens from Alley at the same time—the other one proving to be absolutely worthless.

Well, well! I started out to report on fences and plain sections, and haven't said a thing about it yet. According to my opinion the fence is a success, but can be slightly improved. The plain sections are a perfect success in every way, and with me they have required no cleaning when filled during the white-clover flow; and I feel assured that they will require very little cleaning when filled with fall honey, which is the time the bees gather the most propolis. This thing alone—the fact that no cleaning is required—is sufficient reason for me to adopt the fence and plain section altogether.

The improvement I would make in the fence is to make the cleats wider than ½ inch, and to extend the cleat to the bottom and top of the fence. My bees say they do not care for this passageway over and under the ends of the cleat. Just as soon as they get a little crowded for storage room, and begin to finish the outside and corner sections, they begin to block up this opening over the end of the cleats. The reason I would make the cleats wider is because, in many instances, the edge of the cleat comes very nearly even with the inside edge of the section, in which case the bees often round the cappings up to the fence so that, in taking out the sections, the outside row of cappings is broken. I notice this very little in using the I fence, but with my special fence I notice it a great deal because the bees cap the honey all around next to the wood, filling the section better than they do with the I fence.

I see you figure on having the bottom edge of the fence about ⅓ inch above the inside bottom of the section. This is all right if we do not want the surplus arrangement queen-excluding, and I think the top edge ought to be the same distance below the upper inside edge of the section. Some of the fences you sent were this way, and some were almost as high as the top of the section. In no case did I have any bulged combs. Now, as I have my swarms on half-depth brood-chambers (less than 6 inches deep), could I not get along without queen-excluders if you made my fences with the bottom edge almost on a level with the inside bottom of the section? This is what gave me this idea: I happened to drop a quart of bees with a queen on top of an Ideal super, and the bees immediately descended to the hive below the super, while the queen was left trying to squeeze in between the sections and fences, but could not do it. This set me to thinking, "Why not



DISPLAY OF LOUIS WERNER, EDWARDSVILLE, ILL.—SEE EDITORIAL.

have the bottom edge of the fence so adjusted as to be queen-excluding?"

Eden, Erie Co., N. Y., Aug. 6.

[We can; and if the rest of the fraternity think well of it we will adopt your suggestion.—ED.]

THE INVENTOR OF THE QUEEN-EXCLUDER.

His Giant Hives and Queen-cages, etc.

BY F. GREINER.

In his Straws for July 15, Dr. Miller makes mention of the inventor of the queen-excluder, Fr. A. Hannemann (wrongly spelled Hahnemann). This brings to my mind vividly what Mr. H. wrote in the German papers during the years 1875, '78, '79, about this invention and the general management of his bees; and although about twenty years have passed since then, what he said may still be of interest to the readers.

If my memory serves me aright, nothing has ever appeared in relation to the subject in our bee-literature here, so I will speak of Mr. Hannemann, try to give the essentials of his management, and mingle with it some facts and the experiences of others as opportunity may present.

When Mr. Hannemann wrote his last report for the *Bienen Zeitung*, in 1879, he was then a bee-keeper of thirty years' experience. He had made a specialty of apiculture for twenty-six years in the extreme southern part of Brazil; had introduced our common honey-bee into that land, and was the originator of modern bee-keeping there.

I did not know that, according to Dr. Miller, Hannemann was a tailor by trade; but it is very evident that he could not have had very much leisure to follow his profession, for he was so extensively engaged in bee-keeping and honey-production that his breeding-stock numbered over 300 colonies, which were allowed to swarm at will. From what I have read on and between the lines it would seem to me that all these colonies were kept in stationary hives, perhaps box hives, as we call the hives without frames. Hannemann's aim was, in the first place, to have his colonies swarm all they would, and that was all he expected or asked of them. He called them his stock capital. The young swarms were the interest, so to speak, to be exchanged for honey during the honey season. The *how* will be shown later on.

Southern Brazil must be well adapted to bee culture. Hannemann spoke of his honey season as lasting from two and a half to three months. For six weeks the secretion is so plentiful that bees will not work on any honey offered them in the open air. I think we might be able to show something with such a honey-flow. I have not seen a day like that here in several years, even when I secured a fair yield.

The queen-excluder was invented or gotten up for a different purpose from what we use it for now. Hannemann may have been led to

make his invention on account of many young swarms often going together when swarming at the same time, and he wanting to make a sure thing of it to catch all the queens. At any rate, he constructed a sieve with the view of sifting his bees before hiving them, and so the appliance has been named Hannemann's bee-sieve. In sifting his bees he probably encountered the difficulty of getting the drones and queens mixed together in a heap; and the gain by using just the queen-excluding plate proved insufficient for the accomplishment of his object, so he added another sieve having wider passages, with space between the two. This worked well. It separated and secured queens and drones, allowing the workers to pass through. The latter were hived in the peculiar mammoth hives to be described further on, the drones destroyed, and the queens confined in cages of his own construction.

This brings us to the second use of the queen-excluding metal, for these cages were made of *such* (I wonder that the excluding metal has not been used for this purpose by some of our bee-keepers who practice caging during the honey season). Hannemann wanted his queens caged so as to allow the bees to communicate with them unhampered, hence he made the cages of perforated metal. The unique manner of his management of the young swarms made it strictly necessary to have *every* queen secured. If possible, all the swarms coming in one day were placed in *one* single mammoth hive. Mr. Hannemann speaks particularly of one day in 1879, when he had 79 swarms issue, to be taken care of by himself with the help of his three young children, to be sifted, queens caged, and the bees weighed and hived. One giant hive and two barrels accommodated this enormous "pile" of bees. They gave at the end of the season, net, about 1600 lbs. of honey.

Mr. Hannemann speaks at another time of his "Boss Giant hive" of 50,000 cubic inches, made four stories high, cupboard fashion, with eight hinged doors in the rear, to give access—a hive that harmoniously accommodated 54 kilograms of bees (about 119½ lbs.) from which he harvested, at the close of his 2½ months' honey season, 448 kilograms of honey (equal to about 987 lbs.), and 38 lbs. of wax, reckoning a kilogram as 2½³/₁₀₀₀ pounds. In other words, one or each kilogram of bees was exchanged for 8¾ kilograms of honey. Of the 14 caged queens, but 9 were alive when the honey was cut out.

In 1879 Mr. Hannemann had to take care of 700 swarms (young) in two months. His entire crop amounted to 15,428 lbs. of honey and 1212 lbs. of wax. He stored his honey largely in cemented vats, or cisterns. It is astonishing, so adds Mr. Hannemann to his report, to think that so much honey could be produced in one locality, especially when taking into consideration the fact that over 300 breeding colonies used large but (of course) unknown quantities for breeding besides, and storing their winter supplies at the same time. I would add, it goes to prove that Hannemann has a splendid location, perhaps like California or Cuba, although he says that the

slipshod bee-keepers complain that bees do not pay any more.

The publication of Hannemann's system created a great stir among the German bee-keepers at the time—probably more on account of the novelty of it than for any other reason, although, of course, we all appreciate the queen-excluder. I have not heard of any one in Germany who practices the Hannemann system as he did. Mr. H. Guehler, after several years of trial, thinks but little of the excluder for his locality, but values highly the queen-cage constructed *à la* Hannemann. He worked out this system: When the honey season is nicely begun he confines the queens in Hannemann cages, and places them on top of the brood-frames with super, or, as they call it, "honey-chamber," above. The bees, he says, immediately take possession of the super, providing honey is coming in.

When we cage a queen in the brood-nest in an ordinary wire-cloth cage, the bees behave but little differently from what they do when the queen is entirely removed. They almost always construct queen-cells over larvæ, and the progress in the sections is slow, if, indeed, any work is done at all. This is according to my experience. But when a queen-cage of the Hannemann order is used, and the bees can communicate freely with the queen, they do not seem to be aware that she is caged at all, and Mr. Guehler finds that every thing moves along in the hive normally. Queen-cells are not constructed. The combs become heavier and heavier, and the work in the super—that is, comb-building and honey-storing—goes right on unless the honey-flow ceases. Guehler thinks it is best to release the queen again after two weeks of confinement, removing at the same time a few of the heavy combs from the center of the brood-nest, inserting comb foundation in their stead. Empty comb does not prove to be a success, as the bees will fill in honey too soon. The bees will draw the foundation into comb just about as fast as the queen can utilize it, and she will at once be ready to enter upon her maternal duties as though she had not been obliged to suspend her work. The bees very readily accept their queen, for in reality they have never been separated from her. Guehler finds that queens come out uninjured by this confinement, prove to be just as fertile, productive, and long-lived, as though they had always had their freedom. When carrying the caging plan to excess—that is, confining the queen for an unreasonably long time (in this one case he speaks of it was five weeks), laying workers made their appearance.

It seems, then, that some German bee-keepers have modified the Hannemann system to suit their own environments, or picked out the valuable features according to their own judgment. I noticed, also, that, after the publication of Hannemann's invention, queen-cages like his were offered for sale. They consisted simply of a little wooden frame covered with the perforated metal on each side.

Right here I want to add that some of our German friends across the water have adopted at least some features of *our* methods, our

hives and appliances, owing in a great measure, probably, to the efforts made by Mr. Stachelhausen, of Texas, and myself, to enlighten them on the subject of American bee-hives and our general management of bees. Of course, progress is slow. It seems very hard to give up old methods and adopt new ones. But progress is there. My private correspondence with bee-keepers of Germany establishes that fact beyond a doubt.

Naples, N. Y., Aug., 1898.

(Concluded next issue.)



ABOUT SEPARATORS.

Question.—Do you advise the use of separators in producing comb honey? A bee-keeping neighbor says that money put in separators is thrown away, and, worse still, because bees will not store as much honey where separators are used as where they are not. What is your opinion in the matter?

Answer.—There is no question but bees will store honey in sections without the use of separators; but the question is regarding its *marketable* shape, where stored without them. I first used separators in 1872 on a small scale, to try the feasibility of them. These were cut so as to leave $\frac{1}{2}$ inch between top and bottom of the sections and the separator, as I felt sure they would retard the labor of the bees while storing comb honey, inasmuch as they apparently divided the bees into small clusters. To test the matter thoroughly I used a part of the apiary without separators, and even went so far as to leave the bottom pretty much entirely off the sections on some hives, to see how much the gain would be; but at the end of the season each was about balanced as regards the result in surplus honey, and I began to think that the claim of more honey without separators had no foundation in fact. But I found I had made a blunder in cutting my separators too narrow, in my anxiety to separate the bees as little as possible, for the bees built their combs through the half-inch space, where they were in any way crowded for room.

The next year the separators were cut $\frac{1}{2}$ inch wider, and some were slotted so as to divide the bees as little as possible. Some were used with and some without separators. The result was no perceptible difference as to yield, while many of the sections without separators could not be sent to market at all, as the combs in them were so bulged and crooked that it was impossible to crate them. I finally adopted a separator as wide as the inside of the section, less $\frac{1}{4}$ inch at top and bottom, with no perforations of any kind, and to-day, although I have experimented many ways since then, and a quarter of a century has passed away, I see no reason for abandoning the separators as then chosen, but, on the

contrary, many reasons for still continuing their use, a few of which I will give:

First, I often wish to move the sections about to a different position on the hive, and exchange them with other colonies, to start these colonies to work as soon as possible, believing that better results can be secured in this way. If I did this without separators I should get very uneven combs, as my experience has taught me.

Second, I wish to take off the sections as soon as a sufficient number are sealed over to warrant the work in doing so, while they are "snow-white," and not leave them on the hive till all are finished, and the first capped over all travel-stained by the bees. Now, if we do this, taking out one-third or more, and place those partly filled or empty, except the foundation used for starters, in their places, unless separators are used, the bees will lengthen the cells of those farthest advanced, so as to crowd the others, thus making irregular combs, as we often have them when putting an empty frame between two full ones in the brood-chamber during a honey-yield, and before any of the honey-cells are sealed.

Third, by the use of wide frames with separators we need take none of the precautions about the nice adjustment of the sections and hive, which is always a part of the directions where sections are to be used without separators, but simply slip our sections into the wide frames and clamp them together with no further trouble. I should want to use the wide frames, even did I use no separators, to keep the sections clean, and free from propolis, if nothing more. Were such wide frames used, section honey would reach market in much finer shape than it often does now. From all of my experience and observation up to the present time I believe that section boxes can not be used to the best advantage without separators; hence I consider them one of the greatest inventions which have been made to help the bee-keeper, and expect to continue their use until I am convinced that I am wrong in the above conclusions.

GETTING BEES FROM A HOUSE.

Question.—A swarm of bees came and went into our house near the roof, in the early part of the season, and I wish to get them into a hive. Can it be done? If so, how?

Answer.—If the questioner is willing to have his house torn to pieces to the extent necessary for getting the bees and honey out, there should be no difficulty in changing the bees from the house to a hive, especially if he can call to his aid some bee-keeper of some experience living within a few miles of him. Briefly outlined, the course to pursue would be as follows:

From the inside or outside of the house (just which is most convenient to work from) make a small hole through to the bees; and with a bee-smoker, or by a person smoking a pipe, blow smoke through the hole till the bees are caused to fill themselves with honey, which should be in about five minutes, when you will proceed to tear off the partition of plastering, clap-boarding, or shingles, as the

case may be, till the bees and combs are of easy access, when you will proceed to transfer the combs to the frames of the hive, as given in any book on bee-keeping. As the combs will be likely to contain much honey at this time of the year, more pins or transferring-clasps will be needed to hold them in the frames than would be necessary if the transferring were done when there was little or no honey in the combs, else they may, from their great weight, fall out of the frames. The middle of a comfortably warm day should be chosen for this work, unless there are other bees in the neighborhood which would be liable to cause trouble from robbing. In such a case do it toward the close of a mild day, commencing soon enough to get the job completed before dark. After the house has been torn away so the bees can be gotten at handily, the bees should be made to cluster in a box if possible, by placing such within easy access of them, just above the combs, so that, as comb after comb is taken out, they may crawl up into the box and be clustered there by the time all the comb is fitted into the frames. When all the bees are in the box, set the box with the open side out, in the shade, if the sun is shining hot, and leave them thus for half an hour, so that they may cluster together like a swarm, thus causing them to mark their location anew as does a swarm when leaving the parent hive. Besides, they can then be easily hived by jarring them out of the box in front of the hive after it is lowered to the ground, and placed where it is to stay. Fit combs of honey in the frames till at least 25 pounds is in, as that is, about the right amount for winter, after which the rest can be used by the family. If there should not be this amount, feed sugar syrup to make up the deficiency. If from any cause you fail to get the bees in the box they will, after a little, cluster in a swarm somewhere near where they were, when they can be hived in the box and then taken to the ground and put in the hive without the necessary precaution of having them stand the half-hour; for by the clustering of the bees in any place, without combs, when filled with honey, for a half-hour or so, they are caused to consider themselves as homeless, after which they will mark their location anew and stay where put; though it might be well for you to take the precaution of leaning a wide board up in front of the entrance to the hive, so that the bees will bump against it in starting out, thus causing them to mark their location anew, even if you do not happen to get every thing just right in your operations. If, in addition to this, the house is repaired before the bees fly, and a sheet, or something of that kind, is put over the former place of entrance to their old abode, so as to make it appear like a strange place, scarcely a bee need be lost.

CONVENTION NOTICE.

The next meeting of the Fresno County Bee-keepers' Association is to meet at the City Hall, Fresno, Cal., at 10 o'clock P. M., Wednesday, Sept. 14. All beekeepers invited.
W. A. GILSTRAP, Sec.
Caruthers, Cal.



THE DISLIKE OF BEES FOR BLACK HAIR; PLAIN SECTIONS A SUCCESS.

As you ask if any one is sure about bees showing a desire to sting certain colors, and as I have as cross bees as can be raised, I would say I think they do. My hair is very black, and when I go out into my yard they will fairly go crazy to get into said hair; and when I go through the yard with low shoes and black stockings they are sure to take my ankles.

About the plain sections, I am highly pleased; and if, on further trial, they should act the same—or, rather, the bees—they would be a grand thing. Mine are the tall ones; and wherever the bees worked on them at all they finished the greater part of those they commenced on instead of beginning on all and finishing none, as they generally have done with the 4¼. I would say, by way of explanation, that this locality is overstocked, and no honey to speak of is gathered until the basswood, which lasted only a week this year. That gave me more finished sections, and fewer partly filled, than did the others in T crates without separators. I shall try more of them another year.

C. E. HAMMOND.

Corry, Pa., Aug. 13.

THE DISLIKE OF BEES FOR BLACK.

You ask for reports of the effect of color upon bees, p. 574. Dr. Miller's experience tallies with mine. My bee-veil has a three-cornered piece of black cloth where it passes over each shoulder, and I have often noticed that belligerents make straight for these patches. The patches are small, and make a marked contrast with the cloth immediately beneath.

I have often worn black pants in work with bees, but have to confess that their color never seemed to stir the ire of the bees in the least. One bee-keeper in the neighborhood told me some time ago that black does not suit the bees. You can see that my experience may substantiate your suggestion.

Craftonville, Cal. RUSSELL J. HALL.

HOW BEES DESPISE BLACK.

For a long time after I began to handle bees they would sting my black eyes. I found upon observation that they went for black in any form. I tried them over and over again with hats, coats, etc. I have long known that they will resent black. I have black and white chicks running in the yard. The bees go for the black, and at them alone. There is no guesswork about this aversion to black color.

HAM SMITH.

Ionia, Mich., Aug. 4.

HOW THE BEES STOLE CURRANT JELLY.

A few years ago Mr. James Marvin, of St. Charles, Ill., who will be remembered by some of our old-time bee-keepers, had a curious in-

cident in this direction. In looking through his hives one day he saw his bees had been gathering some red honey, and it puzzled him to tell where they were getting it. A few days afterward he overheard some of the women telling about one of their neighbors who had been making some currant jelly, and she had put it out on the window-sill to cool, and then went visiting that afternoon. When she came home she found all her jelly gone, and the tumblers licked clean. "Oh the plaguy boys!" said she. This, of course, was a clew for Mr. Marvin, and upon further examination he found it was the old lady's currant jelly the bees had stored away for winter use. Of course, he kept that to himself; but we had a good laugh over it.

GEO. THOMPSON.

Geneva, Ill., Aug. 11.

PLAIN SECTIONS A SUCCESS; CROSS-CLEATS ON FENCE A LITTLE TOO THIN; SEASON GOOD, AND AVERAGE 50 LBS.

The honey season that has just closed here has been a remarkable one for this locality. We had a honey-dew that commenced the first of May and continued till the last of July. I had one colony that stored 120 lbs., and my general average was 50 lbs.

I have been using the plain section and fence this year, and find it to be ahead of any thing I have ever used. There is one defect; and when you overcome that, your plain section and fence hobby will override every thing. It is this: The cleats on the fence, which come next to the side of the super, are so thin that a bee can not enter and pass on up the side as it should, but must stop and pass under the fence. And because the bees can not enter this space they pile it full of propolis, and it makes a hiding-place for the moth and ants. But I must confess that the fence is a great improvement over the plain wood separator; and he who produces honey without a separator of some kind is just a little too slow to keep abreast of the times.

DR. S. H. HURST.

Laconia, Ind., Aug. 6.

[We have the matter of thickness of cleats under consideration. The majority seem to think the fence is perfect; but we are looking for defects, if any.—ED.]

CLUSTERING OUT, AND HOW STOPPED BY ENLARGING THE ENTRANCE.

Mr. Ham Smith, page 515, says or tells of a way to enlarge the bee-entrance by raising the front ½ inch and putting a wedge-shaped strip under each side to fill the open spaces, in the fore part of the warm season, when the bees get crowded and warm, and get to loafing on the outside of the hive. I did the same thing last season and this, only I did not close the openings on the sides. I put small pieces of lath under each front corner. If those pieces did not have the desired effect of getting them inside, or started out to work, I added other pieces till they did disperse, and this additional ventilation usually gets them out of the notion of swarming, as I desire

honey rather than increase. I do not have time to pay much attention to my bees, but I try to give them an abundance of room to store surplus honey. Very little honey here ready for market.

O. C. BURCH.

Fairbury, Neb., Aug. 1.

[Our experience has been in the line of the foregoing, and yet as good a man as Doolittle can see no advantage in the practice.—ED.]

THAT ROYAL JELLY IN WORKER-CELLS.

Mr. Editor:—Your question on page 550, July 15, "I wonder how friend Wilkin knew it was royal jelly that he found in worker-cells," is a very proper one. I much dislike the practice of giving one's opinion or guess as a positive fact. I have often observed that, when young queens commence laying both irregularly and sparingly, a few of the young larvæ will be fed three times the amount ordinarily fed to worker larvæ, probably because they have more food prepared than they have larvæ to feed it to. But in the case referred to there were several sheets of young larvæ, and the 75 or 100 cells that I spoke of as being half filled with royal jelly seemed to me to be more opaque than the ordinary larval food. Possibly the amount of it together made it appear so; but this extraordinary filling-up of cells simultaneously with the drawing out of queen-cells, a number of them being these same worker-cells widened out all alike, having larvæ one to one and a half days old, while all around them the great number of larvæ were being fed in the ordinary way, seemed to justify me in saying it was all the same thing—royal jelly.

R. WILKIN.

Ventura, Cal., July 30.

FACING HONEY; DOOLITTLE DEFENDED.

Some folks seem to think that Doolittle is away off; but I think that some one else is just as far astray. A few years ago I shipped 1500 lbs. of honey to Detroit. It was all faced. I saw the commission man after that, and he said my honey was the best that came to market—no fault found. Another year I shipped faced honey to another man, and no fault was found. I always face my honey, and have kept bees nine years, and never had any fault found; but I always put the same grade of honey in the crate.

Now, I believe in being honest, but I do not think it dishonest to face comb honey. I do not think that facing honey is the same thing as facing apples. A large apple is better than a small one of the same kind; so if I buy a barrel of apples for No. 1, and two-thirds of them prove to be No. 2 or 3, or small apples, I am cheated; but if I buy a crate of faced honey, and two-thirds of it is a little travel-stained, or is not in quite so straight combs, or is not quite so well filled, who is cheated if it is bought by the pound?

Bro. A. I., I do love to read your "Home" talks. I sometimes try to preach—indeed, I did nothing else for four years until my health failed.

N. VANDEWARKER.

Brown City, Mich.

REPORTS ENCOURAGING

Honey crop is good. I shall get 4000 lbs., and may get more.

J. F. TEEL.

Elmont, Texas, July 31.

Poorest springing in 30 years. I lost 60 out of 300; cause, poor and little honey; fed 1000 lbs.; had bad weather. Crop of white honey is best in 8 years; buckwheat is just commencing.

JAMES HALLENBECK.

Altamont, N. Y., Aug. 1.

This has been a glorious year for the bee-keeper. There seems to be no end to the crop. To date my apiary has averaged, spring count, 120 lbs. extracted honey, and still coming in.

S. C. CORWIN.

Braidentown, Fla., Aug. 5.

In reply to your honey prospects, I would say I have the best crop I ever took, both as to quality and quantity. Dry weather is just what the saw-palmetto likes, both in bloom and fruit. Nearly all of my crop was gathered from the flowers, sealed in the hives, and extracted without any rain during this time.

W. J. DRUMRIGHT.

Sarasota, Fla., Aug. 8.

FROM 74 TO 127, AND 4500 LBS. OF WHITE HONEY.

I have just commenced casing my honey up. I have got a good crop of white honey from 74 colonies, spring count, and increased to 127 colonies. I have taken, at the lowest figure, 4500 lbs. of white comb honey. That is the largest crop of honey by half that I have yet heard of in this locality. Bees here are strong and healthy, and no foul brood reported to me since spring.

As foul-brood inspector I had to destroy about 25 colonies; but since then I have found no signs of the disease where it then existed, and their bees have given them fair results. I think our strict attention will entirely eradicate foul brood.

A. H. GUERNSEY.

Ionia, Mich., Aug. 4.

REPORTS DISCOURAGING

So far as I have been able to find out, the crop of white honey in this section will average not more than two pounds to the colony. No one among my correspondents reports any. The honey-dealers write me that the crop is very light all through the State. Buckwheat prospects are good. Our bees have just got to work on it.

HARRY S. HOWE.

West Groton, N. Y., Aug. 6.



THE AVERSION BEES HAVE FOR BLACK.

EVIDENCE is now beginning to accumulate, showing almost conclusively that bees have a decided dislike for black objects. Two or three have written that they will attack a black hat when they will not notice one of a lighter color; and one man writes that his hair is as black as coal, and that they will strike for it every time. Another one speaks of two black spots in his veil, which his bees seem to regard as legitimate objects of attack.

I must confess I was loath to believe that bees would be more vindictive toward one color than another, but I presume I shall have to give up to Dr. Miller.

STARTERS VS. FULL SHEETS.

SINCE the question has arisen regarding the advisability of using full sheets or starters in sections, I have been paying particular attention to the honey that has come in; and while, of course, I do not *know* positively what the bee-keeper who produced the honey in question used, I think I can detect almost every section that had only starters in the first place. For instance, when I see the top edge all worker and the rest all drone, I draw the conclusion that only a starter was used. Such boxes, to my eye, present a motley appearance. As nearly as I can judge, at least 33 per cent of the comb honey built off from starters will have, near the top, worker-cells, and the rest drone.

THOSE HONEY-LEAFLETS.

Now is the time to distribute the honey-leaflets. They were written with special reference to the consumer who has been persistently educated to the notion that all comb honey is "manufactured stuff," and that extracted is always adulterated. Among other things they show that honey is more palatable and wholesome than any other sweet in the world, and how it may be used in cookery. The leaflets are sold on the basis of cost, as it is to our interest, as well as to that of bee-keepers in general, that they be scattered broadcast over the country.

For a year back we have been inclosing them in all letters that have gone out from our office, and there are others who are doing the same; besides, there are a good many who put a leaflet in every crate of honey and in every package of extracted where it is possible to do so.

DRONE COMB IN SECTIONS INFERIOR IN APPEARANCE, AND WHY.

I HAVE just been looking over several lots of comb honey that have come in. Quite a number of the sections are built out with drone comb, and are in every way inferior in looks and whiteness to the worker. I do not

see how anybody can think one looks as well as the other. I asked one of our men, who did not know what I was driving at, to point out those boxes that, in his estimation, looked the prettier. He placed his finger on the worker-cell comb every time. I asked him why. "Why," said he, "I do not like the looks of those great big cells." There is another thing that may have something to do with the matter. Cappings of worker comb are apt to be a little thicker, and therefore whiter. The capping of drone is quite liable to be water-soaked or thinner.

RAISING CELLS A LA DOOLITTLE.

I HAVE already told you in these columns that we were meeting with marked success in raising cells by the Doolittle method. Elsewhere in this issue I take pleasure in presenting you a half-tone reproduction of one lot of cells that our Mr. Wardell secured—not necessarily the best lot, but, if I am any judge, a fair average of what he has produced. As all of our readers may not have Doolittle's book on queen-rearing, I have thought best to reproduce a few paragraphs from that book that will give the *modus operandi* in a nutshell. This is the way he makes his cell-cups:

While thinking of this matter, it came to me—why not dip the cells, the same as my mother used to dip candles? This thought so waked me up that I wondered at myself for not thinking of it before, and immediately I had some wax in a small dish, over a lamp, to melt. While this was melting, I hunted up the old stick that I used in forming the cells at my first trial, which was nothing more than a tooth out of a common hand hay-rake. This tooth was now fitted to a queen-cup, as perfectly as I could do it with knife and sandpaper, while a mark was made around the tooth where the open end of the cell should come, so that I could know just how deep I wanted it to go in the wax, to give me the desired depth of cell.

By this time the wax had melted. I then got a dish of cold water, and, after dipping the end of the stick into the water (up to where it was marked, or a little deeper), and giving it a quick jerk, to throw off the water not needed, it was quickly lowered into the wax up to the mark, and as quickly lifted out, twirling it around and around in my fingers, so as to cause the wax to be equally distributed over the wood. I now had a film of wax over the stick, so frail that it could not be handled, but in it I saw the commencement of a queen-cell, which would, I was sure, be a boon to my fellow bee-keepers, for the wax much resembled the very outer edge of a queen-cup built on new comb.

I then dipped it again, not allowing it to go as deep within one-sixteenth of an inch as before, and in twirling the stick after taking it out, the end having the wax on was held lower than the other, so that the lower end, or the base, would be the thickest, as the wax would flow toward the lowest point. As soon as the wax on the cell was cool enough to set, it was again dipped, not allowing it to go as deep in the wax as it did the previous time, by about a thirty-second of an inch, when it was cooled as before. In this way I dipped it from six to eight times, when I had a queen-cup that pleased me, as the outer edge was thinner than the bees made theirs, while the base was so thick that it would stand much more rough usage than would cells built by the bees. I now held it in the water, twirling it so that it would cool quickly, and, when cold, it was very easily taken off of the stick or form, by twisting it a little. It could then be fastened to a comb, by dipping in melted wax, the same as I did with one of the cups.

This is how he fastens them to cross-sticks fastened in brood-frames:

My next idea was to have all of my queen-cells built on a stick, or piece of frame-stuff, the same as I had read about; so when I again made some, instead of taking the cup off the form, I loosened it only enough so that it would slip off the stick easily, when it was

again dipped in the wax and immediately placed on a mark on the piece of frame stuff, which mark I had designated as a place for a cell. In an instant the cup had adhered to the frame-stuff, when the forming-stick was withdrawn. This cell was placed near one edge of the stick, which was one inch wide, one-fourth of an inch thick, and long enough to crowd between the side-bars of one of my frames. The cell was also placed near the center of this stick, as to its length, but close to one side of it, as to width. The next cell or cup was placed one and one-half inches to the right of the first, while the third was placed the same distance to the left, and so on until six were on the stick.

While we have been raising cells *a la* Doolittle, Mr. W. H. Pridgen, of Creek, N. C., it seems, has been meeting with equal or even greater success. In the last *Bee-keepers' Review* there is a double-page half-tone, showing some of his work. There are 18 queen-cells on one stick, and all of them great long peanut-shaped things. Just above them is a row of cell-cups which, I judge, are made after the Doolittle plan, and which, undoubtedly, will be completed into peanut queen-cells — "the double-jointed California affairs."

Doolittle put out his queen-rearing some 9 years ago. A few made a success of his method; but now in these latter days it seems there are quite a number of us who are getting hold of the plan, and are making a great success.

History repeats itself. One man has usually to be in a forward movement years ahead of the times. As the days and years go on, some one else follows in his steps until finally the whole crowd "catches on" and wonder why they did not do it that way before. Doolittle has been to queen-rearing what Morton and Aspinwall have been to the present method of producing honey in plain sections. Verily, the world does move; but it took a century before Galileo's assertion to that effect was regarded as any thing but a heresy, and another century before opposition to it ceased.

A BEE-TENT FOR QUEEN-REARING.

SOME time ago while out kodaking in our apiary I took a view of our apiarist, Mr. Spafford, inside of one of our bee-tents while working over one of the hives. It was during a dearth of honey, and, of course, the robbers were out sticking their noses into every cell of honey that was exposed.

As a result, Mr. S. had to do his work under cover. One of the neighbors' boys, who was near at hand, was called over to stand near the tent, to sort of give life to the general scenery in the yard. As he stood there I took a shot, and here it is. These tents are made of mosquito-netting, and are of the fold-

ing sort. When opened up they are just high enough for an ordinary man to stand up under and work.

We use them for a great variety of purposes. For instance, if a weak colony or nucleus is being robbed we clap one of these tents over it, hive and all. Robbers are brought to a standstill instantaneously, while those in the hive, as soon as they escape, are caught in the tent, and there held. When the sun is down, and the bees have gone to their hives for the night, the tent is removed and the entrance contracted down to one bee. The next morning the bees in the robbed hive will usually have so far recovered themselves as to be able to resist any kind of onslaught.

Some years ago I used one of these tents during one of the worst seasons of robbing I



ever knew, and I never thought of opening the hive during that spell without having over me the tent. When I began its use robbers were so bad that it seemed as if I should have to give up trying to do any thing in queen-rearing. But when I used the tent persistently, and they found they could not get even a taste, they gave up, and I went on with my queen-rearing operations during the rest of the season. While, of course, I could not work so rapidly, yet I was able to accomplish far more than before, and with much greater safety to the nuclei.

I have also tried the tent in the spring, in transferring from box hives to hives of the modern type. I have seen the time when it would be impossible to do any transferring at all, such as cutting and gashing into the comb, without the tent.

There is still another use. Several supers of comb honey, after being freed from bees as

nearly as it is practicable to do with two or three vigorous shakes for each super, are piled up four or five high, and in, say, three or four such tiers. A tent is set over them, and securely anchored to the ground. These cases of honey are left in a shady place for a few hours, or while one is engaged in some other work. Toward night the bees will all have crawled out toward the top, and will be found clustered in the very peak of the house. It is then carefully set off and given two or three smart jars upside down, and, presto! every bee will take wing and go for its home. The supers may now be put on a wheelbarrow and taken to the honey-house, without so much as a single bee in them.

A HONEY-EXHIBIT ON WHEELS.

SOME time ago we received a photo illustrating horses and wagon decked out with a display of honey, bees, and beeswax. It was evident that this wagon was prepared for some gala occasion; and as it illustrates a new way of advertising I had an engraving made. Now for the life of me I can not find a word about the picture, and much less do I know or remember the name of the party who sent it. After rummaging about my belongings, and after waiting a considerable length of time for the lost to "turn up," I decided to put the picture in anyhow, and let it tell its own story.

The proprietor of the display is evidently the gentleman whose hand is on the wagon. Whoever he is, he seems to have an eye to beauty of arrangement and general good taste. If his wagon, with its display of apicultural products, was used in a procession, as is altogether probable, it must have attracted a great deal of attention. At all events, GLEANINGS proposes to have it attract wider attention by showing it to bee-keepers all over the world.

The exhibitor, besides having an eye to beauty, must have had "an eye to business." He evidently knew that such a display carried through the streets of his town could not help advertising him and his business in a way that would be almost sure to bring returns.

The arrangement of the four-wheeled exhibit is understood almost at a glance, and the expense of it, probably, would not exceed any considerable sum.

Now, then, if the man who prepared this display will speak out we shall be glad to publish his name, and give him more advertising.

Ho, ho! after I had written the above, W. P. R., at my elbow, who is taking down my rambling thoughts in "turkey-tracks," or what some would call "pot-hooks and hangers," says he can locate the man. He *thinks* his name is Louis Werner, of Edwardsville, Ill.; but where, oh where! is his letter?

Later.—After putting the above in type we wrote to friend Werner as to the ownership of the display, and he says:

Yes, this is my picture. I am glad I shall see it in GLEANINGS, for all the bee-keepers to see. You see it is a float in a display in the procession of a whole county, and I must say your engravers did a very nice job. It surely makes me "feel good." In October I will, if nothing happens, show another photo of a display. We are going to have a street fair. The

display will be stationary, and, of course, I was invited to exhibit, and, of course, I surely will do so.
Edwardsville, Ill., Aug. 22. LOUIS WERNER.



My trip from St. Paul further west on the Northern Pacific was diversified by some very different scenery. Through Minnesota and North Dakota we passed great wheatfields; and when we approached a station called Wheatland, between Fargo and Jamestown, I realized, as I never did before, something of the amount of wheat that is grown in America. The land is just rolling enough so that occasionally we could look off across the valleys. Clear up to the railroad tracks were the shocks of wheat; and in favorable localities, and with good farming, they stand pretty thickly over the ground. Just imagine wheatfields, or one continuous field, for miles and miles, and as far as the eye can reach. Away off in the distance the shocks of wheat looked like hills of corn. And still further on they seemed like little dots on clean yellow paper. I don't suppose a photo could give any idea of these immense wheatfields I passed through just at harvest time, and in one place I saw seven self-binders following one another around a piece of wheat. At every station we saw cars on the side tracks, loaded with brand-new thrashing-machines and self-binders. In fact, one might wonder what so much beautiful new machinery could be for, until he turned his eyes over the great wheatfields. I judged there must be a tremendous crop this season, for all along the road they are putting up new substantial platforms where wagons can drive up high enough above the cars so the wheat can be emptied from the wagon right down into the car, with little labor. Every thing is wheat. There seems to be little or no rotation of crops in many places. Once in a while we see a small piece of oats, a little corn, and a few potatoes; but this is the exception. I do not know how long this thing can go on without some sort of rotation of crops. Of course, there is no manuring, and I judged they have not yet begun to use fertilizers. As a result of these large fields, the farmhouses are few and far apart. Schoolhouses and churches seem to be mostly in small towns along the railroads, and I fear that many of the farmers are almost entirely cut off from school and church privileges.

At Bismarck we crossed the Missouri River, which is muddy and rambling, a good deal as it is through the State of Missouri. After we passed the line from North Dakota to Montana the country became much more mountainous and wild, and agriculture begins to be confined to the watered valleys. At Glendive we strike a beautiful large river which I thought must be the Missouri again; but a passenger informed me that it was the Yellowstone; and I said to myself, as I gazed

at the great broad river with its rapid current, "Why, is it possible that this great river comes all the way from Yellowstone Park?" Well, the railroad follows th's Yellowstone River either right along beside it, or within sight, all the way to Livingston, and a branch road up through the canyon to Cinnabar also follows this Yellowstone River as it goes down the mountain; but from Cinnabar it goes clear up through the park to its source at Yellowstone Lake, which I shall mention again further on.

At Miles City and Billings I began to see large tracts of alfalfa; and when the car stopped long enough I looked in vain for a honey-bee, either on the wild flowers or the alfalfa. I did not find one. At Forsythe I found the largest quantity of Rocky Mountain bee-plant I ever saw in my life. There were large tracts where the ground was just covered with it. It looked like a snowbank at a distance, only it was pink instead of white. Not a bee was seen on this plant, and yet in the early morning there must be tons of honey going to waste.

At Billings I saw a public square in the center of the town, with such a beautiful stand of alfalfa, that I asked some questions about it. I happened to address the man who had charge of the ground. He told me that they decided a blue-grass lawn would look prettier, so they tried last spring to get out the alfalfa. They plowed it down deep, harrowed it thoroughly, and employed a man to rake out the alfalfa roots and stems, and then sowed their blue grass; but the alfalfa came up first, choked out the blue grass, and made a better stand than they had before plowing it up. Of course, they practice irrigation. Every thing has to be irrigated.

I reached Livingston early in the morning. Before leaving home I had ascertained from our subscription-list that we had a subscriber there — Mr. George A. Gordon. Friend G. informed me that he had no bees as yet, but had been taking GLEANINGS because he was interested in the matter. He said he did not know of a honey-bee within a hundred miles in any direction. He kindly procured a livery, and took me out a little in the country and up on the hills. While we found great multitudes of honey-plants we did not find a honey-bee; and I may state right here that I was not able to find a single honey-bee during the whole of my stay of ten days in and around Yellowstone Park. Mr. Gordon told me his attention was called to bee-keeping because a subscriber of ours, Mr. Carl Vollmer, at Billings, had a few colonies. During the present season he has already secured, he thought, about 200 lbs. of honey per colony. Now, friends, there is certainly a big field for bee-keeping in the valleys of Montana, where alfalfa is largely grown by irrigation.

You may look in almost any direction in and around Livingston, and see snow-capped mountains. This looks a little odd when the thermometer in the afternoon gets up pretty close to 100 degrees in the shade. The temperature is especially trying when there is no rain, and dust is everywhere. But it was my

good fortune to meet gentle showers every day for four or five days during my stay in the park. These showers were sufficient to lay the dust nicely.

We went up a mountain canyon by rail to Cinnabar. There is some very interesting mountain scenery along the route. I would especially mention what is called the Devil's Slide. This is not unlike a place by the same name in California, that I have lately described, except that the mountain "slide" is blood-red where his majesty is supposed to have gone down so many times. As one goes past on the cars he can hardly resist the conclusion that sawlogs or something of like nature have been shooting down that straight and narrow passage so as to have worn the rocks smooth. This slide is between two walls of trap-rock, about 100 feet apart, extending up the mountain nearly 2000 feet. The name of the station, Cinnabar, was probably suggested by these beautiful red rocks in the vicinity.

At this terminal station I left my baggage, and started off on my wheel. Mr. J. W. Mackay, the gentlemanly agent for the Wiley Co., very kindly agreed to carry my grip and overcoat on the coach for 25 cts. a day; and I very soon had abundant reason to be thankful that I did not undertake to carry any luggage. If you are going to wheel it through the park, by all means get the coach to carry every ounce that you do not absolutely need on your journey. Most of my wheeling was done in my shirtsleeves, without trying to carry even my tool-case. The Wiley Co. also kindly agreed to pick me up at any point, and carry me, *wheel and all*, for \$1.25 for each half-day. So you see you can ride your wheel in the forenoon, and, if you get too tired, be carried, wheel and all, in the afternoon, wherever you may wish to go.

The trip from Cinnabar to Gardiner is a very easy one. In fact, you do not need to get off your wheel at all if you are a fair rider. At Gardiner the road leaves the Yellowstone, and follows the Gardiner River for about two miles, then leaves the canyon, and starts directly up the mountain. Climbing up this mountain road is a big task without any wheel at all. I started off about six o'clock. They told me I had better wait till morning, but I was anxious to see the sights. I remarked that I could make five miles in two hours, even if I had to walk every step, and climb hills besides; and I *did* make it just at dusk, but I tell you I was pretty well tired out; in fact, I was too weary to take more than a brief glimpse of the wonderful springs. At daylight, however, I was out before anybody else was visible, studying nature.

Before undertaking to describe what I saw, I want to say a few words about Yellowstone Park, the hot springs, and the geysers in general. All along the road through the park the government has put up mile-posts. They are a great convenience to wheelers, as they tell you just where you are at every mile. These mile-posts also give you the elevation. If I am correct, Mammoth Hot Springs at the big hotel is 6387 feet above sea-level. So you

see the whole Yellowstone Park is on the summit of a pretty good-sized mountain.

Our best authorities say this region was originally volcanic. In fact, they find the remains of extensive craters of several volcanoes. Well, now please consider that in these upper regions there is not only a terrible winter but a tremendous fall of snow; in fact, the snowfall is so great that there are no means known for getting through the park in winter except on snowshoes; and the man who has charge of the signal station of the Weather Bureau is about the only one who stays all winter in the park unless it be a few soldiers. Well, when this great snowfall melts, the water goes down into these old volcanic craters until it reaches, at some unknown depth, the internal fires of the earth. This produces steam, and the steam forces the water up to the surface of the earth. The water comes back boiling hot, and the steam along with it. It also becomes mixed with various minerals such as salts of lime, silica, etc. Boiling water, as you know, is a great solvent. When it comes to the surface of the earth, thus charged with minerals of various kinds, it deposits them fast by evaporation. Boiling water evaporates very rapidly when it reaches the air. Secondly, it drops these chemicals as it cools off. Water, at the boiling-point, will hold in solution a very much greater quantity of many chemicals than it will when cooled off. Now, keeping the above facts in mind, you can readily imagine how the sides of these boiling springs may be coated and incrustated with different chemicals. I expect to have some pictures ready for our next issue, illustrating the very strange things I saw that first morning at Mammoth Springs.

Before going further, let me say a word concerning the places of entertainment in the park. First, we have the great hotels. I stayed my first night at the one at Mammoth Springs. It is a hotel of elegance, and inside I found it to be a place of comfort. It is true, their prices are \$4.00 a day; but you will have to pay pretty nearly that price at the large hotels in the cities. It is somewhat of a novelty to see such an establishment away back in the wilderness. The table has all the appointments of a first-class meal in the dining-car on our best railroads. When we consider that every thing has to be pulled up these great hills by horse power, the prices, certainly, are not very extravagant. As there have been some reports that their prices were extravagant, and that it costs a dollar simply to turn around, I took some pains to find out about it. A first-class bath costs only 25 cents. That is what you pay almost everywhere. After going through the park my shoes were pretty badly roughed up, and looked rather dry and "seedy." No one tries to keep his footwear shined up in the park; but on my return I asked the porter at the big hotel to fix up my shoes good. He first oiled the rough red spots, then burnished them down smooth, then did one of the best jobs of blacking I ever saw anywhere, and he charged me only a dime. A few days ago I paid 15 cents on the streets of Livingston for a very ordinary job. The wait-

ers at the big hotels are very obliging. They came down and took my wheel and carried it up the steps for me (for which I was very thankful), showed me where to wash, and, even though I was dusty and unpresentable, they showed me just as much attention as if I had ridden up in one of their own coaches. I found this same careful and considerate courtesy, both on my way out and on my way back. I have said this much for the hotels because I think it is their due. But while I am about it I want to find fault a little with the baggage-men who take the trunks from the train (on baggage-wagons) up to the hotel. As the trunk containing my wheel was at the back side of the car, I was obliged to wait for these people to unload. Now, these men cursed and swore because the guests of the hotel had brought such a pile of trunks. In fact, they seemed to be displeased because so large a party had come in the same day I arrived. Even when ladies came around to see about their baggage, these men did not cease their vile talk. I am sure the transportation company will look after this when they are informed of it. When friend Mackay, who belonged to the Wiley Co., came up and found I was going through on a wheel, it was a refreshing contrast. The other fellows, with vile oaths, had declared they would not carry my wheel-trunk up the hill to the hotel for either love or money. Mr. Mackay is principal of the high school in Butte, Montana. Mr. Wiley's drivers on part if not all of his coaches are students who are carrying tourists during their vacation time, in order to get money to complete their studies; and I tell you, friends, there is some difference in the behavior of a young man who is trying to get an education, and the fellows who sometimes drive coaches.



SUNDAY EVENING, IN THE HEART OF THE YELLOWSTONE.

For a time it seemed I should be compelled to travel with the crowd on Sunday, or wait here for the uncertain coming of another band of tourists; but toward Saturday night, much to my surprise (even though I had prayed over the matter) one after another of our party consented to use Sunday as a day of rest here in the very heart of the geyser region. Mr. and Mrs. Boyles, who have charge of the camp, are Christian people, but told me that, if we had any meeting, I would have to take entire charge. The only one to lead the singing was Minnie, a very pretty 16-year-old girl who waits on the table. Around the campfire, back here in the wilderness, all seem to meet on a common level; and, in fact, it takes all we can call in to get up a good family circle, oftentimes. As we had but one Gospel Hymns, Minnie and I were obliged to

do most of the singing. As my audience were mostly people of wealth and education, some of them addicted to expensive habits, I felt more than usual anxiety about what I should say, but finally selected for my reading the latter part of the 6th chapter of Matthew, selecting for a text, "Seek ye first the kingdom of God and his righteousness, and all things else shall be added unto you," and spoke something as follows:

Dear friends, after the many pleasant acquaintances I have made in the past few days I realize more than ever before how differently we are constituted, and how far apart many good people stand on the moral issues of the day. We are, many of us, prejudiced, and this is true of both believers and unbelievers; and many times because we do not really understand one another. This Bible I hold in my hand, I verily believe will do more to harmonize the world than any or all else combined, if we will only listen to it and read it.

Let us now consider our text. As a rule, all people assent to at least the first part of it. Few people now, of education and culture, dispute the existence of God. It is now, as in olden times, only the *fool* who says there is no God. Of course, there are people who wish they could escape God, for they can not bear the thought of God's righteous judgment. Having acknowledged the existence of a righteous God it seems very reasonable that we, his creatures, should accord him the *first place* in our thoughts, and, in fact, in the lives we live. This very service we are all now taking part in is, in fact, setting apart one day in seven to acknowledge him and to seek him, in the language of our text.

The world may not be all ready to do it, by a long way; but the world, nearly all, will agree that it is a very good and proper thing to seek him first, and place him above all things. Now if, in our business matters, and matters of state, we could agree to seek first God's kingdom and his righteousness—why, it would make a heaven here on earth. Let us consider for a moment how very far we are from agreeing on religious matters. Somebody has said there are *seventeen* different kinds of Presbyterians, and probably almost as many of other denominations. If bodies of *Christians* can not agree any better than this, how are we to expect to unite believers and unbelievers in harmony? Can we not drop some of our denominational walls, and unite on the little text we are considering?

Let me now quote another of my favorite and *precious* texts: "Great peace have they who love thy law, and nothing shall offend them." People get offended, and this is what makes the divisions in the church and the divisions in society. Are there any nowadays who love God's law to the extent that *nothing* offends them? When we find such a one, *he* will have that "great peace."

Dear friends, and all who hear my voice, would *you* have that *great* peace? Are you sometimes "blue"? do you have trouble and misunderstandings? In our walks over these beautiful grounds, several have suggested that a plunge in a boiling spring would end all

troubles *much quicker* than drowning. Have you ever had such thoughts? Shall I give you a remedy? Make this Bible your friend; read it every day; follow its counsels, and life will be worth living. When you open your eyes in the morning you can sing, "Praise God, from whom all blessings flow." You will thank him every day for having given you a life to live; but it must cease being a life for self. It must be to God *first* and *above* all, and then the promise in the latter part of the text will *surely come*.

LETTER TO MY SUNDAY-SCHOOL CLASS.

Dear Boys:—I am sitting on the shore of a beautiful lake about ten times as large as Lake Chippewa. It is about 8000 feet above sea-level, and is surrounded by mountains capped with snow. In fact, snow is always in sight. It is one of the best places for catching speckled mountain trout in the world, and they are the finest fish I ever ate. Last night at supper the cook said we were all to eat just all we pleased, as the guests had caught so many they would have to throw a lot away; but I started to tell you

A BEAR-STORY.

The United States government protects the bears and all other animals here, so they are very tame. Well, a few days ago a large fine bear climbed into the meat-man's wagon and picked a large piece of beef out of one of the barrels while the man had gone into the hotel. The piece was so large the bear had to hold it with his fore paws while he walked off on his hind feet. The man came out and caught him at it, and pounded him over the head with a club; but he wouldn't let go his meat, and got away; but he grunted and growled a good deal at the pounding he got.

Well, when I heard them telling about it I wanted to see the bear, and a party of us went about half a mile and found him just about sundown, up in a big pine-tree. I rather think somebody chased him up the tree. Well, we wanted to see him get down, and so a man climbed a slender pine-tree near him and began punching him with a pole. As soon as he saw the man coming up he pricked up his ears, and began to growl, and show his teeth. I tell you, he is a great beauty. His fur is soft and shiny, and he is just as soft and handsome as any kitten you ever saw. Well, the bear climbed as high as he dared on the slender top; but as the man kept poking him he kept growling at a fearful rate, and got awful mad; but he went slowly still higher; finally the slender limbs broke beneath his great weight, and down he slid with a great crash to the larger limbs, and then he began climbing down with a rush for he was mad. At the same time the man began to get down lively, for he feared the bear might try to climb *his* tree after he got down. By this time a *crowd* of people had collected; and just for fun, while we were all laughing and yelling, some called out, "Three to one on the bear!" others, "I put my money on the man." The man got down first, however, and then the bear wouldn't come down any

more. A bear can go up a tree very fast, but he is awkward and slow in coming down, for he has to prick up his soft velvety ears that look so cute and cunning, and see where to put his great feet. With much love I am your absent teacher.



When I left home on the 28th of July I was fighting the blister-beetles on my early potatoes. Up in the swamp they had stripped the leaves off from one corner of the patch, so I supposed they would die down and ripen up. In fact, the whole patch seemed pretty nearly mature. Well, when I went up to the swamp garden on my return home after an absence of nearly four weeks, one of my

"HAPPY SURPRISES"

met me. The potato-patch that I supposed would be dry and brown was a mass of green. The rains which they had in great plenty during my absence had started a second growth, and the vines of the New Queen potato not only covered the ground, but they were a mass of rank luxuriance, equal to any thing I saw out west. You may remember I wrote they did not seem to have blight out there. When I got home there was no blight here either. I am now inclined to think that what I called *blight* is mostly if not all a drying-up on account of the extremely dry weather. When plenty of rain came, new leaves came out; and even the stalks where the bugs had left only bare brush are now leaved out again. Of course, my New Queen potatoes may be bad-shaped and prongy; but as we are growing them mostly for seed they will answer just as well, only they will not look as handsome. I pulled out a great potato weighing about a pound, from one hill where I saw the ground puffed up. It was of good size and fine shape, but it had some new potatoes in the shape of knobs growing out from the main one. Now, if it were the Freeman potato under the same circumstances, the potatoes would grow larger but not prongy. I have never found any other potato that would take on a second growth, and keep its shape, as will the Freeman.

On one side of the swamp garden we had put some well-rotted manure between the rows. The manure had to be removed, and we did not know what else to do with it. Well, you just ought to see the potato-vines where that old manure was put. They just cover every thing, and the color is enough to make a gardener's heart bound. I do not believe this *old* manure will make the potatoes scabby. I have tried it a great many times, and it seems to work all right. I should hardly like to put on manure fresh from the stables, under the same circumstances.

Well, it was not the potatoes alone that caught my eyes. You may remember that wheat that fell down so badly, and that the clover was all choked out. Before I went

away I directed that the wheat-stubble should be gone over with the cutaway, and crimson clover sown—that is, wherever the red clover was missing, and then the whole was to be harrowed down smooth with the Acme. This was done, and the crimson clover is now up, helping to make the ground green again. I say *helping*, for the wheat that got shelled off when my crop went down has come up too, with this treatment. Now, what will be done? I am sure I am not farmer enough to know what will be the result of sowing wheat the fore part of August. I am sure of one thing—it will be excellent to turn under with the clover for potatoes next year. But can we make any better use of it? The stand is excellent, and the wheat looks all right, only it is a month or more ahead of the usual sowing-time. All over our ranch I find the potatoes are rank and luxuriant. What I took to be *blight* has entirely disappeared.

Our potatoes planted near the first of July did not come up evenly. The hot weather probably dried up a good many of them before they could come up. I had supposed, until this season, that, when potatoes were sprouted on the barn floor, with tough green sprouts, they would always come up; but they did not this time. I am having the potatoes cultivated where the growth is not too rank for the horses to get through, and then I am having them nicely hoed. Where hills are missing, the boys are pulling the dirt, with hoes, up around the other hills. Do you say this is lots of work? Well, the potatoes are the Bovee, Manum's Enormous, and other valuable varieties. I know I can get a big yield—yes, a much bigger yield—by going to the expense of this handwork, and I rather think it will pay with high-priced potatoes such as I have mentioned.

OUR TEST OF EARLY POTATOES.

It is a very hard matter indeed to say which potato was earliest, except that, as I have stated many times before, the White and Red Triumph were died down and ripe away ahead of any others. But there were potatoes among the Bovee, Early Ohio, and others, almost as large for table use as the Triumphs of the same date. Both of the latter kept on growing, and made a much better yield. The Triumphs are certainly more susceptible to blight, or dying down from early maturity—perhaps I might say from *premature* maturity—than any of the other varieties.

By the way, the New Queen and Early Vaughn are growing yet just like the potatoes in the swamp. They lived long enough to catch the rains and start a second growth. The other earlies died down. Now, which one gave the most and nicest potatoes? Well, my answer is a surprise to myself. In fact, I do not know but it is another of my "*happy surprises*," because it is our old friend the Early Ohio. Once more I can say with the Experiment Station, the world has not yet produced, all things considered, any better early potato than the Early Ohio. They are of good shape, good yield, and more uniformly of good size, than any other unless it is the Bovee. The Bovee is going to be, I predict,

the most successful competitor to our old and tried friend the Early Ohio. And, by the way, there are different strains of the Early Ohio. This is evident, for the strain we are growing this season is a great improvement on any other we have had for several years. I got them from an old friend who says he always has a good yield of nice clean potatoes, of good size, by late planting. This strain is almost as round as an apple—almost no small ones in the hills, and a very good yielder.

In the above report there are several encouraging things; and one of them stands out strong and clear; namely, it pays to keep your potato-patch clean, and to fight the bugs, even if the potatoes are apparently almost ripe enough to dig. Why, I should have lost more than half of my crop of New Queens up in the swamp if I had said they were so nearly ripe it would not pay to put out more work on them. All over the West I saw potato-patches abandoned after the vines pretty well covered the ground. I am sure it is a mistake. When you can not get a horse to go through them any more, let a boy go through just after a rain, and pull out the weeds. Where the potatoes have been well cared for, it does not take very long to get all the scattering weeds out of an acre, and these scattering weeds grow with amazing rapidity. I found red-top among some of our potatoes, almost a yard high, when I am sure there was not any in sight before I left home. Even though it is to-day the 23d of August, we are having our potato-fields cleaned out nicely. If our present rains continue, I shall expect our potato-vines to keep growing clear on until frost catches them. At this season of the year there are no bugs, and not often any blight. When we have passed the extremely hot weather of summer we have the very best time for potatoes to grow, and this is one advantage in late planting.

You may remember the big potato that I got last October at friend Terry's (see page 597, Aug. 1). Well, the potatoes that I grew in the greenhouse finally started in my absence, and a great many of them are up, and are growing rank and strong. I am going to make a pretty good record of a crop from one potato in just one year, after all.

Manum's Enormous potatoes, planted on some rich ground where we turned under strawberries at the last picking, are making a most astonishing growth. I not only feel happy every time I take a look at them, but about every time I think of them, as the vines are now covering the ground almost like pumpkin-vines. And this reminds me of

THE BENSON RENOVATOR COW PEA.

I had half a pint of these peas, and planted them some time in June. They were along the edge of that field of wheat that had lodged. In cutting the wheat, the three horses with the binder went right over the peas. They stopped and started so much when the machine was clogged that the cow peas were almost tramped out of existence. I had pretty nearly given them up. But on my return home I had another of my happy surprises in

seeing the great rank mass of green foliage that not only covered the ground but spread over on to the wheat-stubble and into the corn on the other side. Some of the vines are s.x feet long, and there are great pods, almost a foot long, crammed full of peas. If a tenth part of what friend Benson claims for this renovator cow pea is true, it seems to me it must be a great thing; and at least a part of it, I am sure, is true. I should just like to plow under all this mass of vines in order to fit the ground for planting potatoes; but to do this I suppose we shall have to plow the pea-vines under in the fall.

Humbugs and Swindles.

After reading the article in GLEANINGS about the electric healer at San Saba, Tex., I wish to say that we have one of the same frauds located at Waco. He calls himself Dr. W. T. Coleman, natural electrical healer. A great many go to him for treatment, and some are willing to testify in almost any way that they have been entirely cured of all sorts of maladies; yet I have no idea he has benefited any one in the least, except to create a little mental and physical excitement. He rubs the naked skin, and ladies, young and old, submit to his treatment, and pay a big price for it. I think most of his patients are ladies. We are visited frequently by divine and electric healers, spiritualists, hypnotists, and other frauds, and they all seem to reap a good harvest from the "suckers." You have my sympathy in all your efforts to better mankind. JNO. M. KILLOUGH.

Waco, Tex., Aug. 18.

That is right, friend K. Hold them up to public gaze, and pass them around. Give them free advertising. Shake up community until people begin to open their eyes to the absurd folly of the quacks. Let us keep the thing going until the Oxydonor people, Electropoise, electric healers, and everybody else who is robbing sick people finds that the business does not pay. The proper thing to do is to *starve them out*.

ONE PERSON OUT OF EVERY SEVEN DRINKS,
BUT NOT MORE THAN ONE OUT OF
SEVEN THINKS.

The above is from our national president of the Anti-saloon League, Howard H. Russell. Bro. R. adds further to my heading above that the other five are indifferent. Now, the above strikes me very forcibly, as we have been having in our town of Medina a pretty fierce conflict—in fact, we are having it yet—in regard to open saloons. Our town has had no open saloons for a little over twelve years; but since we have, within a very few weeks, made a big raid on the saloons that are not open (except to a favored few), the enemy have been massing their forces in favor of an open saloon. I can get along very well with the person who drinks, and I stand right beside (or at least I hope I do) the one who *thinks*; but I have been *exceedingly* tried with the other five out of the seven who, without a thought, sign their name to a petition, and, in fact, even without *reading* the petition so as to know what sort of paper it *was* they signed.

SPECIAL NOTICES BY BUSINESS MANAGER

HONEY MARKET.

The demand for honey is opening early this year, at prices which indicate a marked improvement over last year. Inquiries for honey are numerous, and we are selling freely to many who often have honey of their own to sell. We are having plenty of offers from Colorado, Utah, and Nevada, showing that the crop in those sections is good. We have on hand the following honey at prices annexed, all in 60-lb. cans, two in a case; Nine cases light-amber white sage, No. 30, at 7c per lb. Thirty cases light-amber white sage, No. 10, at 7c. Four cases buckwheat at 5c. We shall have plenty of clover and basswood mixed, in a few days, at 7½c. Fancy white comb honey, 14c per lb. A No. 1 white, 13c. Full-crate lots at ½c per lb. less. The light amber No. 10 is candied somewhat, otherwise is same as No. 31. We have written several that we were entirely out of light amber; but an inventory shows above result.

STATISTICS.

We find, on footing up our tally-books, where we keep a record of the different styles of hives packed for shipment, on orders that we have sent out this past season, nearly 3000 Danz. hives; about 3000 Dove-tailed chaff hives; about 7000 teu-frame Dove. hives, and over 50,000 eight-frame Dove hives, besides a great many of other styles for other people, so that, all together, we have disposed of at least 70,000 hives the past season, or about double the record of any previous year. It is also safe to say that we could have disposed of from 10,000 to 30,000 more if we could have supplied them promptly. We do not anticipate such a record next year, as there are, without doubt, a large number of the hives sold this year in the hands of bee-keepers, unused. In view of the outlook we have decided not to build the large addition to our factory, for which we had planned prepared two months ago. We do intend, however, to put in the larger engine, and extend our factory building 20 feet, adding some new machines, and changing others, so as to increase our capacity when needed.

Special Notices by A. I. Root.

THE UNITED STATES BEE-KEEPERS' UNION.

Please remember that the next session of this society is to be held at Omaha, on the 13th, 14th, and 15th of this month. Providence permitting, Ernest and I expect to be on hand. Friend York, of the *American Bee Journal*, informs us that the round trip from Chicago to Omaha will not be more than \$14.75. He also suggests that it would be pleasant for the bee-keepers to go in a car together, so far as possible, from Chicago on. Inasmuch as a great many of the friends will wish to visit Omaha anyhow, before the exposition closes, we should be very glad indeed to see a good turn-out of bee-keepers. Copies of the Program may be had of the Secretary, Dr A. B. Mason, Station B, Toledo, O., by sending 5c to cover postage, etc.

EXTRA NICE STRAWBERRY-PLANTS AT VERY LOW PRICES.

In consequence of the recent abundant rains, in connection with heavy manuring, we have an unusually fine lot of extra strong well-rooted strawberry-plants; in fact, they are the very best we ever had at this time of the year. Notwithstanding, we make the following low prices on all of the standard late varieties. In fact, they are lower prices than we have ever given before on strawberry-plants. Till further notice, prices will be as follows: 10 plants, 10 cts.; 100, 50 cts.; 1000, \$4.50. If wanted by mail, add 5 cts. for 10 or 25 cts. per 100 for postage. The plants we are prepared to furnish at the above prices are Jessie, Rio, Sharpless, Warfield, Bubach, and Haverland. The three last are imperfect. Of the newer varieties we can furnish Darling, Earliest, Marshall, Brandywine, and Wm. Belt, all perfect, at 15 cts. for 10 plants; 75 cts. per 100; \$6.00 per 1000. The Carrie and Margaret

will be double the above prices, as our supply is limited. Any of the above will be potted in jadoo fiber for one cent a plant extra, providing you give us 10 days' notice before you want them. If potted plants are wanted by mail, add two cents each for postage. Nick Ohmer we can now offer potted in jadoo, postage paid, at 10 cts. each, or 85 cts. for 10 plants. I am well aware that the above prices on many of the new varieties are away down below those advertised by many other growers; but we have at present a great surplus on hand that we are anxious to get rid of.

AMERICAN PEARL AND OTHER ONION-SETS FOR FALL PLANTING.

In consequence of a short crop we shall be obliged to advance the price on American Pearl to the following: Quart, 25 cts.; peck \$1.25; bushel, \$4.50. Other varieties of onion-sets will be as follows:

White Multipliers—quart, 20 cts.; peck, \$1.00, bushel, \$3.50. Large Multipliers (for planting out to make small ones), half the above prices.

Whittaker onions, same as the large Multipliers. We are sold out on small Whittaker onions.

White Victoria and Prizetaker sets, the same as American Pearl. Red and yellow top onion-sets (sometimes called acorn onion-sets), 15 cts. per quart; peck, \$1.00; bushel, \$1.50.

Yellow and red onions, for growing the above acorn sets, half the above prices.

Winter Egyptian onion-sets—quart, 5 cts.; peck, 35 cts.; bushel, \$1.00. For a description of all these onions and onion-sets, for fall planting, see leaflet on growing bunch onions, free of charge, and also our regular seed catalog.

If wanted by mail, add at the rate of 10 cents per qt. for postage and packing

EARLY POTATOES FOR SEED.

Owing to the exceedingly wet spring, followed later by a severe drouth, the crop is small in most localities. In fact, rather poor potatoes are now selling for table use for from 50 to 60 cts. Nice ones would bring from 75 to 75. In view of this I do not think the prices will be any less than last year—probably higher. As inquiries are coming in, however, at this early date, we shall be obliged to fix a price, subject to changes later on. For the present they will be the same as last season—\$1.25 per bushel, or \$3.00 per barrel, with the exception of the Bovee. This seems to be remarkably free from any tendency to blight, especially for so early a potato. Ours, planted late in June, are now a perfect mass of luxuriance and health. For the present the prices on the Bovee will be \$2.00 a bushel; per barrel, \$5.00. In regard to earliness, the Red and White Bliss stand unquestionably at the head; that is, the vines die down and dry up before any other; and potatoes fit for eating are certainly as early as if not a little earlier than any other variety known. The following is a list of the potatoes we have already dug, and which are in the cellar, ready to ship. After considerable debating of the matter, we place them in the following order in regard to earliness:

Triumph, either White or Red; Bovee; Early Ohio; Early Andes; Early Zehr; Early Prize; Burpee's Extra Early; Early Vaughn; New Queen; Early Thoroughbred; Freeman. There are three or four kinds that ripen so nearly at the same time that I really can not tell which one is earlier than the others. For instance, of those mentioned, the Early Ohio, Zehr, Andes, Prize, and Bovee. The Bovee furnishes rather larger potatoes than the others; and I am inclined to think it would furnish potatoes the size of a hen's egg, say, earlier than any other in the list, unless it is the Triumphs. Of course, different seasons and different localities might give a different result.

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